

ENVIRONMENTAL
ASSESSMENT
FOR

CONTRACT NO. AA 396-101-571
MARYLAND ROUTE 177

From Maryland Route 100 to Pinehurst Road

MARYLAND

177

REPORT NUMBER: FHWA MD-EA-85-11-D

FEDERAL HIGHWAY ADMINISTRATION

REGION III

Maryland Route 177
Maryland Route 100 to Pinehurst Road
Anne Arundel County
Maryland

Administrative Action

ENVIRONMENTAL ASSESSMENT

U.S. Department of Transportation
Federal Highway Administration

and

State of Maryland
Department of Transportation
State Highway Administration

Submitted pursuant to 42 U.S.C. 4332 (2) (C) 23 U.S.C. 128 (a)
CEQ Regulations (40 CFR 1500 et seq.)

HAL KASSOFF
ADMINISTRATOR

Feb. 19, 1986
DATE

by: Neil J. Pedersen
Neil J. Pedersen, Director
Office of Planning and
Preliminary Engineering

FEB. 20, 1986
DATE

by: Fred J. Hempel
Federal Highway Administration
Division Administrator

SUMMARY

SUMMARY

1. Administrative Action

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

2. Additional Information:

Additional information concerning this project may be obtained by contacting:

Mr. Louis H. Ege, Jr.
 Deputy Director
 Project Development Division
 State Highway Administration
 Room 310 707 North Calvert Street
 Baltimore, Maryland 21202
 PHONE: (301) 659-1130
 HOURS: 8:15 a.m. - 4:15 p.m.

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 District Engineer
 Federal Highway Administration
 711 West 40th Street
 Baltimore, Maryland 21211
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 HOURS: 7:45 a.m. - 4:15 p.m.

3. Description of Proposed Action

This project proposes a multilane reconstruction of Maryland Route 177 along the existing alignment from Maryland Route 100 to Pinehurst Road to alleviate the existing capacity and safety problems (see Figure 1).

4. Alternates Description

During the Spring of 1986, Maryland Route 177 from Maryland Route 100 to Maryland Avenue will be upgraded to a three-lane roadway with State funding. This improvement will satisfy immediate and interim traffic demands only.

Under this study three Build Alternates and the No Build Alternate are being considered to address future problems related to capacity and safety.

Alternates 2 and 2A consist of widening the existing roadway to a four lane undivided roadway from Maryland Route 100 to Long Point Road. Alternate 2A includes left turn bays at higher volume intersections.

Alternate 3 consists of widening the existing roadway to a five lane roadway with two through lanes in each direction and a continuous two way left turn center lane from Maryland Route 100 to Long Point Road. An alignment of each Build Alternate which avoids wetland and 100-year floodplain impacts at Angel Bog has also been developed.

5. Summary of Impacts

Alternate 2 would require the relocation of four families and two businesses. Alternates 2A and 3 would each require the relocation of five families and three businesses. The selection of an avoidance alignment at Angel Bog for any of the Build Alternates would require the relocation of two additional families. Suitable replacement housing is expected to be available. No concentrations of minorities would be affected. No working farms would be adversely affected.

No impacts to any known historic sites, archeological sites, or public parks or recreational areas are anticipated.

The Build Alternates are consistent with the Transportation Plan of the Anne Arundel County General Development Plan, adopted in July, 1978.

The alignments of each Build Alternate encroach upon the 100-year floodplains and non-tidal wetlands of Fresh Pond/Angel Bog, however, avoidance alignments have been developed for this

6
area.

No stream crossings would be involved. Stormwater management and sediment and erosion control measures will minimize water quality impacts. No known populations of any threatened or endangered plant or animal species exist in the project area.

No violations of state or federal ambient air quality standards for carbon monoxide are predicted to occur with any Build Alternate.

Federal Highway Administration noise abatement criteria would be exceeded at 7 sites for all Build Alternates. Predicted noise levels at four (4) sites would increase 10 decibels or more over existing levels. Noise abatement is not considered feasible at any of these sites.

A comparison of each alternate can be found in the Summary of Impacts Table on the following page.

TABLE 1
SUMMARY OF IMPACTS
Maryland Route 177

	No-Build	Alt. 2	Alt. 2A	Alt. 3	Alt. 2 Avoidance	Alt. 2A Avoidance	Alt. 3 Avoidance
1. Relocations Required:							
Families	0	4	5	5	6	7	7
Businesses	0	2	3	3	2	3	3
Minorities	0	0	0	0	0	0	0
2. Historic/ Archeological Sites Affected	0	0	0	0	0	0	0
3. Public Recreation Lands Affected	0	0	0	0	0	0	0
4. Consistent with Master Plan	NO	YES	YES	YES	YES	YES	YES
5. Woodland Areas Affected (Acres)	0	11.5	12.6	13.6	10.9	12.0	12.8
6. Wetland Areas Affected (Acres)	0	.1	.1	.2	0	0	0
7. Floodplain Areas Affected (Acres)	0	.6	.7	1.1	0	0	0
8. Threatened or Endangered Species	NO	NO	NO	NO	NO	NO	NO
9. Air Quality Impacts: Number of Sites S/NAAQS	0	0	0	0	0	0	0
10. Noise Impacts: Number of Sites Exceeding Federal Noise Abatement Criteria	3	7	7	7	7	7	7
11. Costs Construction (\$1,000) -Includes sidewalk costs	0	9,175	9,478	9,632	9,455	9,758	9,912

8

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

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

9

ENVIRONMENTAL ASSESSMENT FORM

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
A. Land Use Considerations			
1. Will the action be within the 100 year flood plain?	<u>X</u>	_____	<u>pgs. I-9 & IV-6</u>
2. Will the action require a permit for construction or alteration within the 50 year flood plain?	_____	<u>X</u>	_____
3. Will the action require a permit for dredging, filling, draining or alteration of a wetland?	<u>X</u>	_____	<u>p. I-9</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>	_____
6. Will the action require a grading plan or a sediment control permit?	<u>X</u>	_____	<u>p. IV-8</u>
7. Will the action require a mining permit for deep or surface mining?	_____	<u>X</u>	_____
8. Will the action require a permit for drilling a gas or oil well?	_____	<u>X</u>	_____
9. Will the action require a permit for airport construction?	_____	<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>X</u>	_____
11. Will the action affect the use of a public recreation area, park, forest, wildlife management area, scenic river or wildland?	_____	<u>X</u>	_____

10

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
12. Will the action affect the use of any natural or man-made features that are unique to the county, state, or nation?	<u>X</u>	<u> </u>	<u>p. IV-8</u>
13. Will the action affect the use of an archeological or historical site or structure?	<u> </u>	<u>X</u>	<u> </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> </u>	<u>X</u>	<u> </u>
15. Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	<u> </u>	<u>X</u>	<u> </u>
16. Will the action change the overland flow of storm water or reduce the absorption capacity of the ground?	<u>X</u>	<u> </u>	<u>p. IV-7</u>
17. Will the action require a permit for the drilling of a water well?	<u> </u>	<u>X</u>	<u> </u>
18. Will the action require a permit for water appropriation?	<u> </u>	<u>X</u>	<u> </u>
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	<u> </u>	<u>X</u>	<u> </u>
20. Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	<u> </u>	<u>X</u>	<u> </u>

11

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
21. Will the action result in any discharge into surface or sub-surface water?	<u>X</u>	<u> </u>	<u>p. IV-8</u>
22. If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?	<u> </u>	<u>X</u>	<u> </u>
C. Air Use Considerations			
23. Will the action result in any discharge into the air?	<u>X</u>	<u> </u>	<u>p. IV-14</u>
24. If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?	<u>X</u>	<u> </u>	<u>p. IV-14</u>
25. Will the action generate additional noise which differs in character or level from present conditions?	<u>X</u>	<u> </u>	<u>p. IV-19</u>
26. Will the action preclude future use of related air space?	<u> </u>	<u>X</u>	<u> </u>
27. Will the action generate any radiological, electrical, magnetic, or light influences?	<u> </u>	<u>X</u>	<u> </u>
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> </u>
29. Will the action result in the significant reduction or loss of any fish or wildlife habitats?	<u> </u>	<u>X</u>	<u> </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>	<u> </u>

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
E. Socio-Economic			
31. Will the action result in a pre-emption or division of properties or impair their economic use?	<u>X</u>	<u> </u>	<u>p. IV-4</u>
32. Will the action cause relocation of activities, structures, or result in a change in the population density or distribution?	<u>X</u>	<u> </u>	<u>p. IV-1</u>
33. Will the action alter land values?	<u>X</u>	<u> </u>	<u>p. IV-5</u>
34. Will the action affect traffic flow and volume?	<u>X</u>	<u> </u>	<u>p. II-3</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>	<u> </u>
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>	<u> </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>p. IV-5</u>
38. Will the action affect the employment opportunities for persons in the area?	<u>X</u>	<u> </u>	<u>p. IV-4</u>
39. Will the action affect the ability of the area to attract new sources of tax revenue?	<u>X</u>	<u> </u>	<u> </u>
40. Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?	<u> </u>	<u>X</u>	<u> </u>

	<u>YES</u>	<u>NO</u>	<u>COMMENTS</u>
41. Will the action affect the ability of the area to attract tourism?	_____	<u>X</u>	_____
F. Other Considerations			
42. Could the action endanger the public health, safety or welfare?	_____	<u>X</u>	_____
43. Could the action be eliminated without deleterious affects to the public health, safety, welfare or the natural environment?	_____	<u>X</u>	_____
44. Will the action be of statewide significance?	_____	<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>X</u>	_____
46. Will the action require additional power generation or transmission capacity?	_____	<u>X</u>	_____
47. This agency will develop a complete environmental effects report on the proposed action.	_____	<u>*</u>	_____

*This Environmental Assessment has been in accordance with the National Environmental Policy Act.

14

TABLE OF CONTENTS

	<u>PAGE</u>
Summary	s-1
I. Description of Proposed Action	
A. Project Location	I-1
B. Project Description	I-1
C. Description of Existing Environment	
1. Social Environment	I-1
2. Economic Environment	I-5
3. Land Use	I-5
4. Historic and Archeological Resources	I-7
5. Natural Environment	I-7
6. Existing Air Quality	I-10
7. Existing Noise Conditions	I-11
II. Need for the Project	
A. Purpose	II-1
B. Project Background	II-1
C. Existing and Projected Traffic Conditions	II-2
D. Existing and Projected Safety Conditions	II-3
III. Alternates Considered	
A. Interim Improvement	III-1
B. Alternates for Detailed Studies	III-2
IV. Environmental Impacts	
A. Social	IV-1
B. Economic and Land Use	IV-4
C. Historic and Archeological Impacts	IV-5
D. Natural Environment Impacts	IV-6
E. Air Quality Impacts	IV-12
F. Noise Levels and Noise Impacts	IV-18
V. Comments and Coordination	V-1
VI. Appendices	

15

LIST OF TABLES

	<u>PAGE</u>
Table 1 Summary of Impacts	s-4
Table 2 Population and Growth	I-2
Table 3 Racial, Ethnic, and Age Composition	I-3
Table 4 Noise Sensitive Receptors	I-12
Table 5 Noise Abatement Criteria and Land Use Relationships	I-14
Table 6 CO Concentrations at Each Receptor Site, PPM	IV-17
Table 7 Projected Noise Levels	IV-20

16

LIST OF FIGURES

	<u>AFTER PAGE</u>
Figure 1 Location Map	I-1
Figure 2 Study Area	I-1
Figure 3 Census Tracts/Planning District	I-2
Figure 4 Community Facilities and Services	I-3
Figure 5 Existing Land Use	I-5
Figure 6 Future Land Use	I-6
Figures 7 - 8 Average Daily Traffic	II-3
Figure 9 Typical Sections	III-3
Figure 10 - 16 Alternate 2	III-3
Figure 17 - 23 Alternate 2A	III-3
Figure 24 - 30 Alternate 3	III-3

**I. DESCRIPTION
OF PROPOSED ACTION**

I. DESCRIPTION OF PROPOSED ACTION

A. Project Location

Existing Maryland Route 177 is located in northeastern Anne Arundel County, Maryland (see Figure 1). Maryland Route 177 is one of two east-west highways in the project area, and connects Maryland Route 2 to Gibson Island.

B. Project Description

Maryland Route 177 functions as an intermediate arterial providing the sole highway access to the Magothy Peninsula east of Maryland Route 100 (see Figure 2). It is a two-lane roadway with no access control on which peak hour congestion and delay are caused by left turning vehicles at the numerous intersections. The proposed project would reduce traffic congestion on Maryland Route 177 between Maryland Route 100 and Pinehurst Road.

C. Description of Existing Environment

1. Social Environment

a. Population

According to the U.S. Bureau of the Census, Anne Arundel County's population increased by 24.4% in the period from 1970 to 1980. The population is projected to increase by 22.6% by the year 2000.

The study area corridor is situated on the county's Magothy Peninsula between Main Creek and the Magothy River. In the past 20 years, this area experienced a large population increase due to the establishment of new communities and expansions in older residential areas.

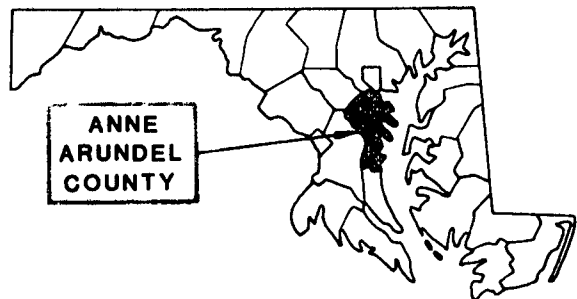
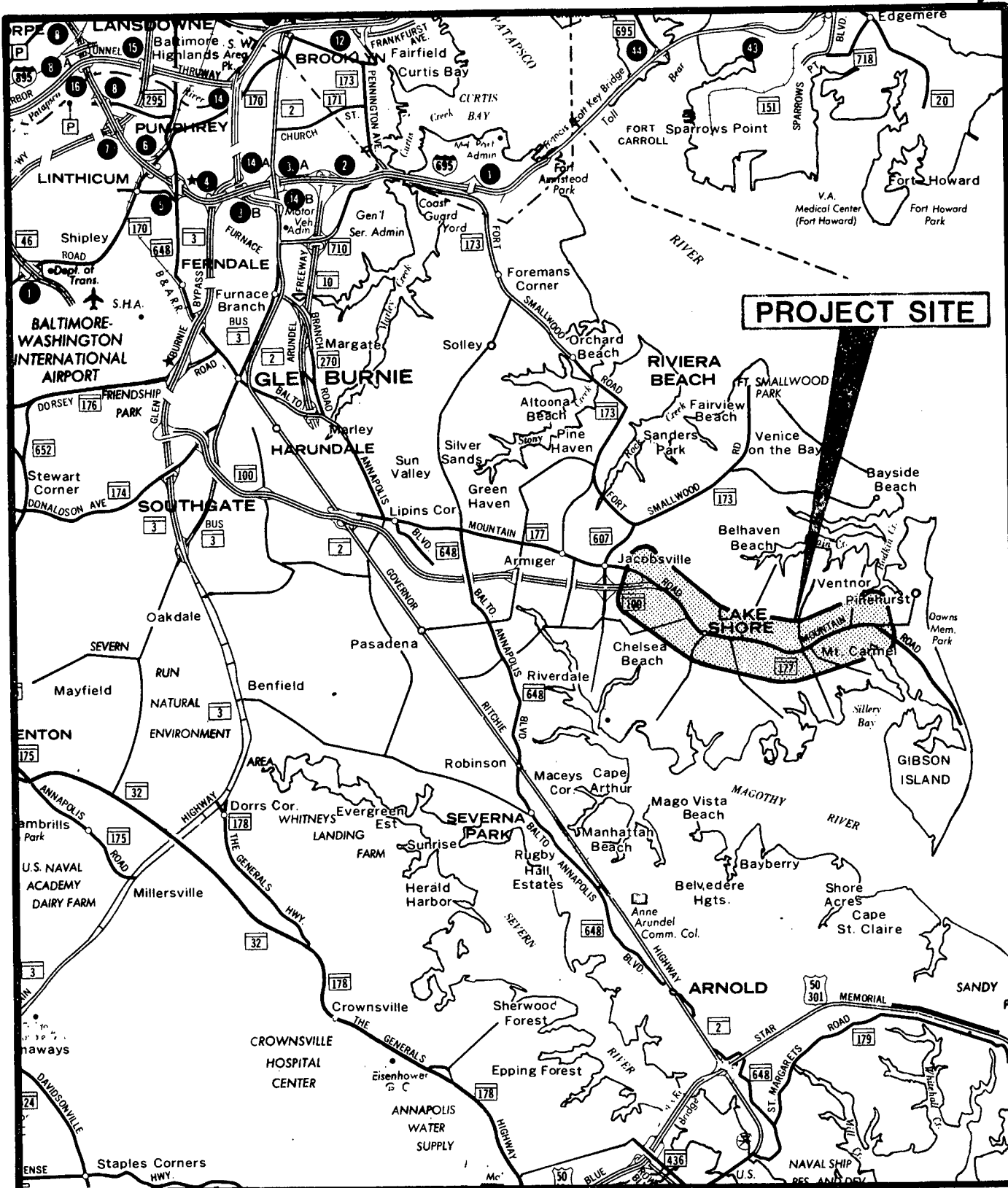
County population figures for Planning District 207 (which includes the study area) indicate that the population increased over 32% to 33,201 people from 1970 to 1980 (Table 2). This population is projected to increase by 31% by the year 2000. The estimated 1985 population is 37,766 people.

The proposed project is located within portions of Census Tracts #7312.02, 7313.02, and 7313.03 (Figure 3). In the last decade (1970 to 1980) the population in all three census tracts increased by an average of 42.1% (13,722 to 19,490 people). Census Tract #7313.03 (the area north of Maryland Route 177 and east of Lake Shore) experienced the greatest percentage growth (63.4%) during this time period. Census Tract #7312.02 (south of Maryland Route 177) also experienced a relatively large increase in population 46.9% (Table 2).

TABLE 2

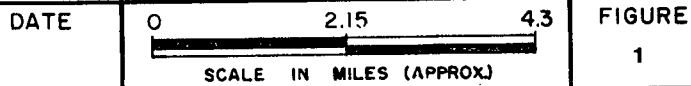
	Population and Growth		
	1970	1980	% Change
Anne Arundel County	298,042	370,775	24.4
Census Tract Total	13,722	19,490	42.1
Census Tract 7312.02	4,847	7,122	46.9
Census Tract 7313.03	4,031	6,588	63.4
Planning District 207	25,109	33,201	32.2

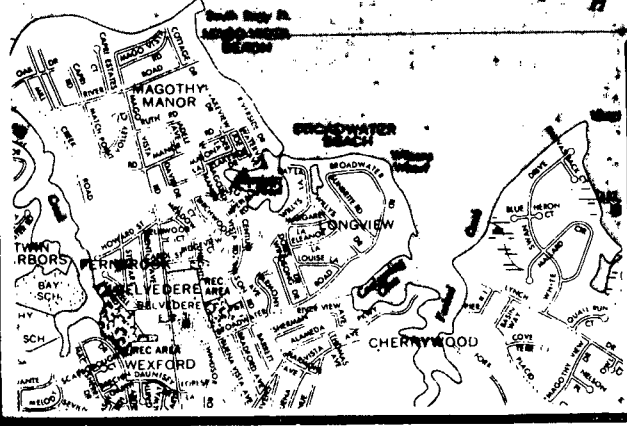
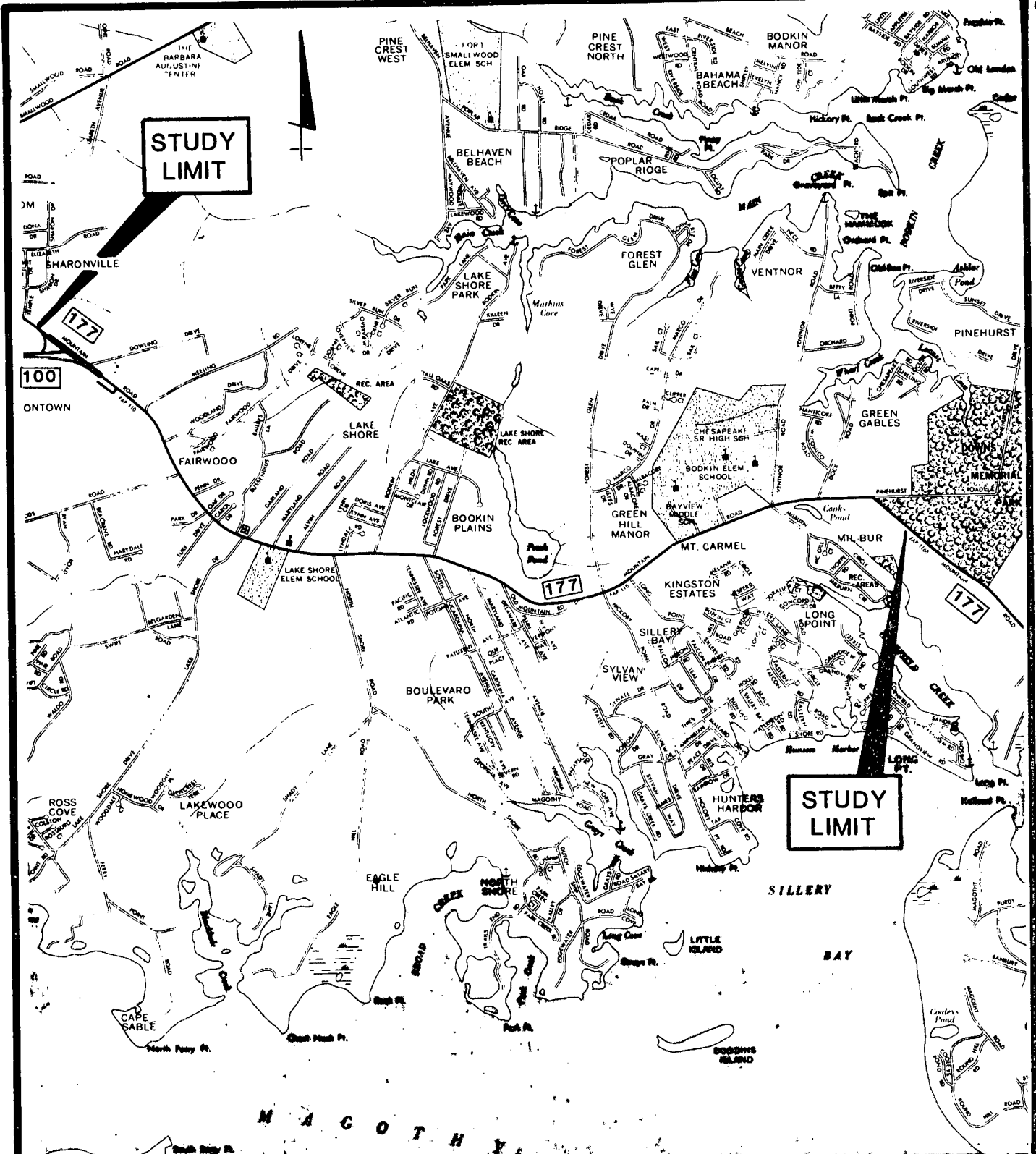
An analysis of 1980 Census data reveals that an average of 97% of the total population in these census tracts were white, 2% were black, and the remaining 1% were Orientals and American Indians. Census tract #7313.02 had the highest proportion of minority residents (4.7%).



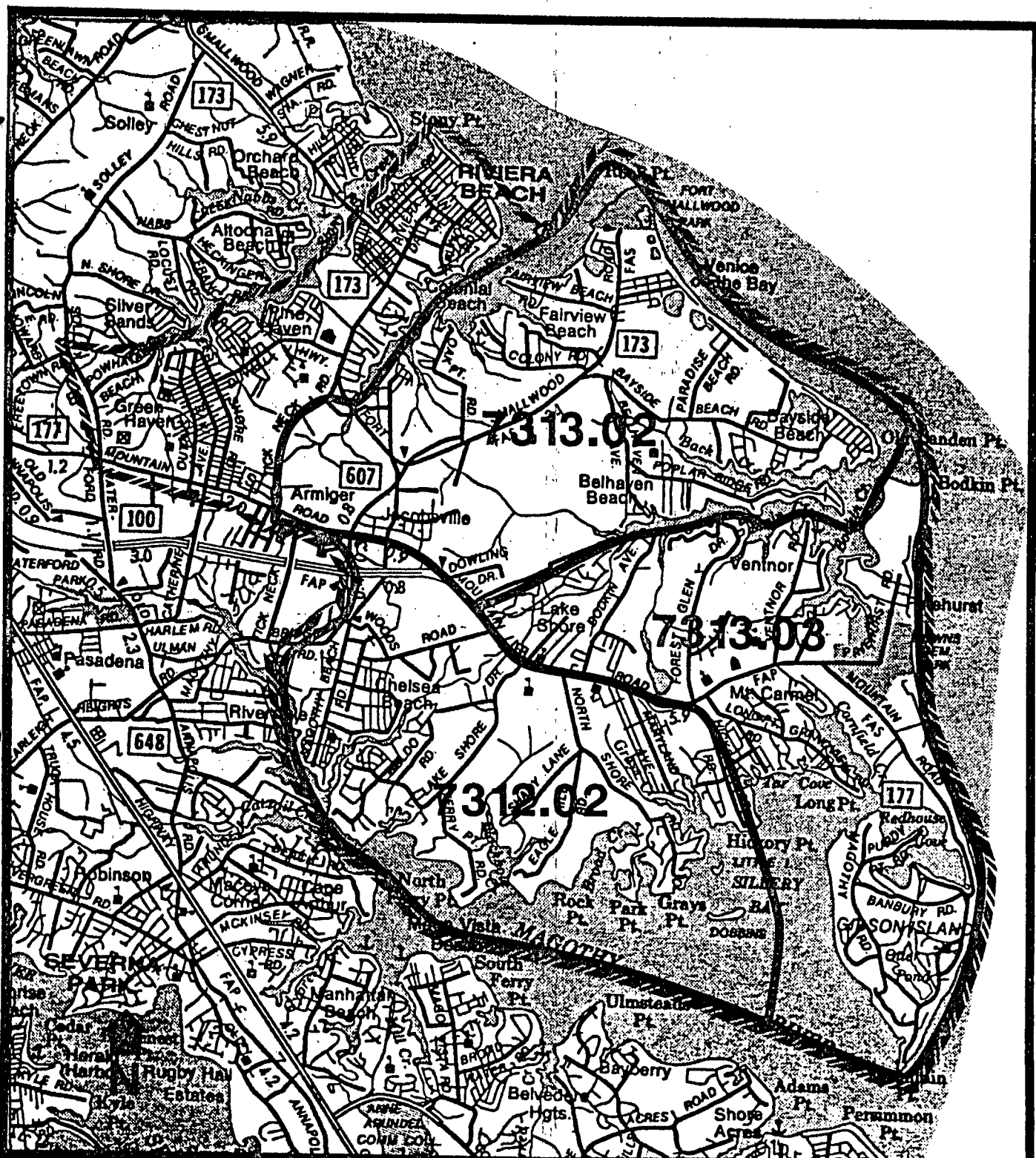
MARYLAND ROUTE 177
 MARYLAND ROUTE 100 TO PINEHURST ROAD

LOCATION MAP





MARYLAND ROUTE 177			FIGURE
MARYLAND ROUTE 100 TO PINEHURST ROAD			
STUDY AREA			
DATE			2
	SCALE IN FEET		



LEGEND



PLANNING DISTRICT 207



CENSUS TRACTS

MARYLAND ROUTE 177

**CENSUS TRACTS/
PLANNING DISTRICT**

FIGURE 3

Those age 60 and older accounted for 10.6% of the total census tracts population, with the largest percentage residing in Census tract #7313.02 (13.3%) (see Table 3). No concentration of elderly or handicapped individuals were identified in the study area. A small concentration of minority families is located on Woods Road.

TABLE 3
Racial, Ethnic, and Age Composition

	Number (Percentage of Total)			
	CT 7312.02	CT 7313.02	CT 7313.03	Total
Total	7,122	5,780	6,588	19,490
White	6,904 (97.0)	5,509 (95.3)	6,474 (98.3)	18,887 (96.9)
Black	197 (2.7)	178 (3.1)	40 (0.6)	415 (2.1)
Chinese	15 (0.2)	-	-	15 (0.1)
Japanese	-	-	43 (0.6)	43 (0.2)
Filipino	-	43 (0.7)	31 (0.5)	74 (0.4)
American Indian	-	50 (0.9)	-	50 (0.3)
Other	6 (0.1)	-	-	6 (0.03)
60+	585 (8.2)	770 (13.3)	714 (10.8)	2,069 (10.6)

Approximately 11% of the total census tract population were defined by the 1980 Census as living in rural areas. Census tract #7313.02 had the highest proportion of population classified as rural (18.4%). This census tract area is not intensively developed at this time compared to other areas along Mountain Road.

b. Community Facilities and Services (Figure 4)

Situated in the project's study area are the following services and facilities:

24

Schools - Lake Shore Elementary
Bodkin Elementary
Chesapeake Bay Middle
Chesapeake Senior High

Churches - Our Lady of the Chesapeake
Lake Shore Baptist
Galilee Lutheran
Mount Carmel United Methodist and Cemetery

Fire Station - Lake Shore Volunteer Fire Company
U.S. Post Office - Pasadena Branch
Lake Shore Democratic Club

Parks and Recreation - Downs Memorial Park (a recreational park)

Police protection is provided by the Anne Arundel County Police Department, Eastern District (facility located one mile west of Maryland Routes 100/177 Y-Split) and the Maryland State Police, Glen Burnie Barracks.

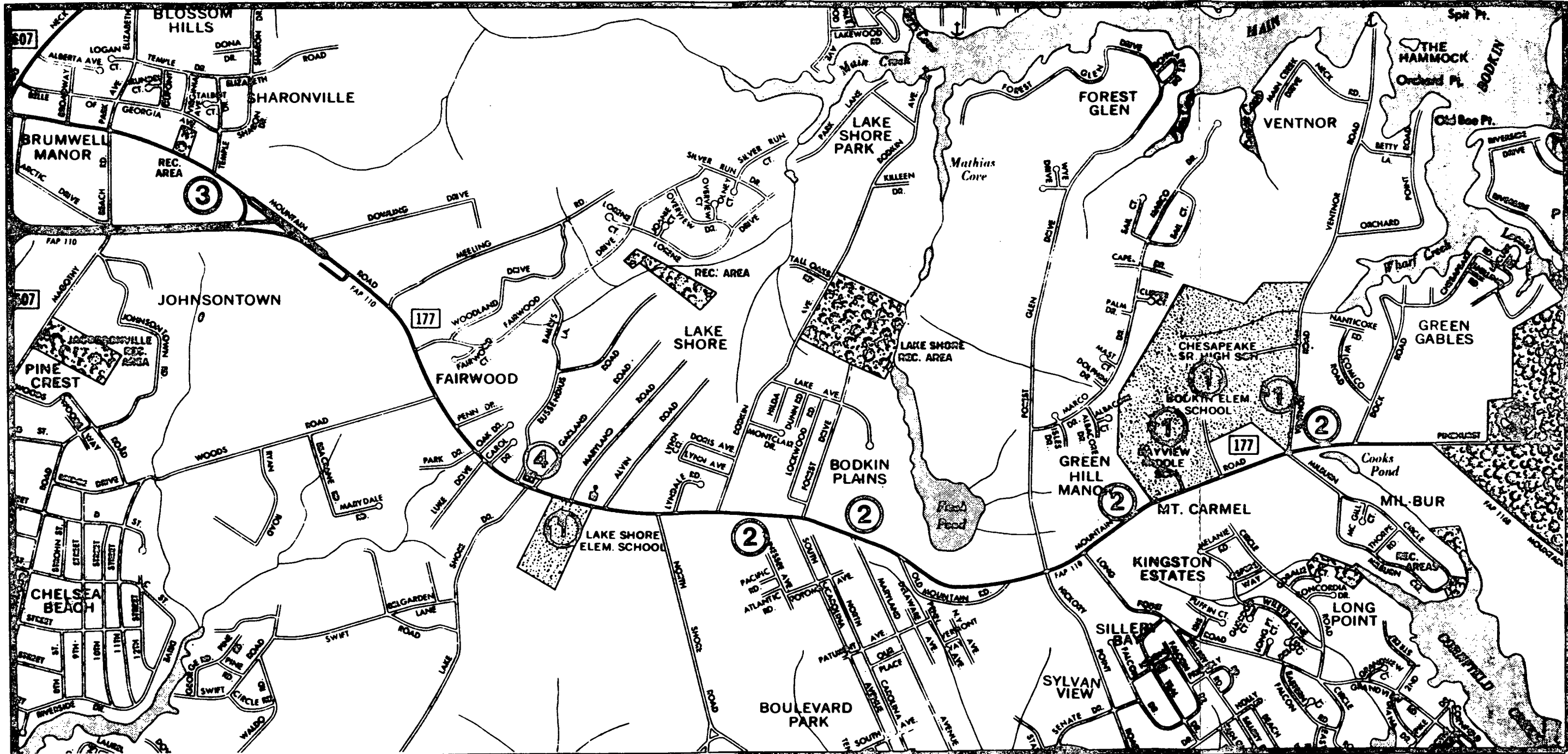
The Anne Arundel County Fire Department, Paramedic Unit 10 is located adjacent to the Eastern District Police Station.

The closest hospital is North Arundel Hospital in Glen Burnie. The study area is included in the county's northeast and Magothy Community Health Centers service areas.

The County's Rivera Beach branch library is located several miles north of the study area.

Public transit plays a minor role in transportation service. An MTA bus route on Maryland Route 177 terminates at Long Point and Gibson Island.

Development in the study area is served by well and septic systems. Public water is only provided on Gibson Island. There are no plans for extending public water and sewage services into the remainder of the Magothy Peninsula.



LEGEND

- ① SCHOOL
- ② CHURCH
- ③ POST OFFICE
- ④ FIRE STATION
- ⑤ PARKS AND RECREATION

MARYLAND ROUTE 177

COMMUNITY FACILITIES AND SERVICES



FIGURE 4

2. Economic

Economic activities are not intensively developed in the study area. Several clusters of commercial and retail activity comprise the major economic element and are situated on Maryland Route 177 near the Y-split, between Meeling and Maryland Roads and at Long Point Road. They typically consist of small businesses with a limited market area. These include convenience and liquor stores, groceries, gas stations, repair shops, restaurants, etc. Because Maryland Route 177 is a peninsular route, these businesses are more oriented to the needs of the local population and recreational traffic.

Community shopping centers containing a few larger stores are located at the Maryland Route 100/177 Y-split and at Long Point Road. Other commercial uses are scattered along the remaining length of Maryland Route 177. Many of these businesses employ small numbers of employees. Larger areas of retail and commercial activity are located west of the study area along Ritchie Highway.

An analysis of 1980 Census data reveals that a majority of the working population in the three census tracts were employed in wholesale and retail trade, manufacturing, public administration, and construction. The 1979 median income for households in these census tracts averaged \$24,768, which was higher than the county-wide median of \$22,395. Of these, Census tract #7713.03 had the highest median income figure (\$27,655).

3. Land Use

a. Existing (Figure 5)

The predominant land uses in the study area are low to

27

medium density single family residential development and wooded/brush areas. Some scattered institutional, recreational and marina uses are also characteristic. Several wetland areas, earmarked for conservation, are present on the east side of the study area. As previously stated, most commercial development is concentrated along Maryland Route 177 between the Y-split and Lake Shore Drive and at Long Point Road.

The present residential development is a mixture of older and newer structures.


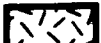




b. Future (Figure 6)

The Anne Arundel County Land Use Plan (1978) envisions residential expansion into undeveloped areas of the study area along Maryland Route 177, but only at rural residential density (two acres or more per housing unit). The preservation of natural features in the siting of houses and other structures is encouraged, along with the continued provision of undeveloped areas (Fresh Pond, recreational areas, shorelines). Significant additional commercial activity is not anticipated or planned. Existing commercial activities will continue in clusters near major intersections. No extension of public water and sewage into the study area is planned.

East of the study area at the end of the peninsula, Gibson Island would retain its residential character. The plan indicates that the peninsula area above the Pinehurst community and Downs Memorial Park is to be developed to low-to-medium density residential use. Under the proposed 1985 Land Use Plan, this area has been downscaled to rural residential development density. Otherwise, the proposed plan indicates no significant



LEGEND

-  LOW DENSITY RESIDENTIAL
-  LOW TO MEDIUM DENSITY RESIDENTIAL
-  COMMERCIAL
-  WOODED/BRUSH/FIELD
-  INSTITUTIONAL
-  WATER

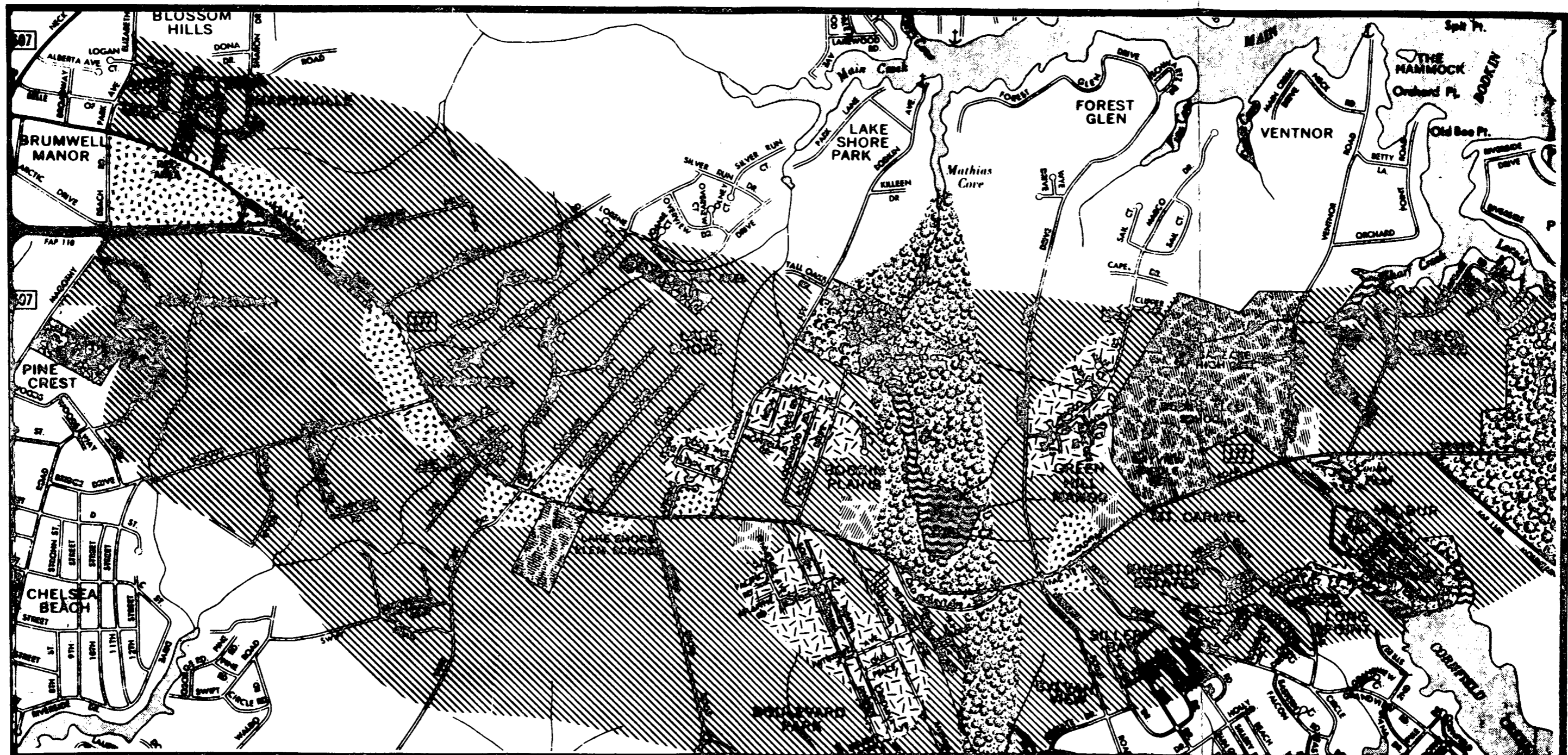


MARYLAND ROUTE 177







EXISTING LAND USE



FIGURE 5



LEGEND

-  LOW DENSITY RESIDENTIAL
-  LOW TO MEDIUM DENSITY RESIDENTIAL
-  COMMERCIAL
-  WOODED/BRUSH/FIELD
-  INSTITUTIONAL
-  WATER



MARYLAND ROUTE 177

FUTURE LAND USE



FIGURE 6

changes from the existing plan for the study area.

4. Historic and Archeological Resources

There are no historic sites listed on or considered eligible for the National Register of Historic Places though correspondence for the Maryland Historical Trust indicates that the Bodkin School may be eligible for the National Register, this site was destroyed by fire in December, 1985.

No archeological sites were identified in the project area during a survey completed by the Maryland Geological Survey.

5. Natural Environment

a. Topography/Physiography

The study area lies on the western shore of the Coastal Plain physiographic province. Terrain in the area is generally flat with elevations ranging from approximately 20 to 100 feet above sea level. Generally, existing slopes are within a range of 0% to 5%.

b. Geology

The Coastal Plain Province is underlain by a crystalline basement composed of mica, gneiss, gabbro and other rocks which outcrop on the Piedmont Plateau. This basement is covered by a series of sedimentary rocks. These cretaceous rocks form the Potomac Group of interbedded quartzone gravels, protoquartzic to orthoquartzic argillaceous sands and multicolored silts and clays. The Potomac Group is composed of three distinct formations:

Raritan and Patapsco Formations: gray, brown, and red variegated silts and clays; lenticular, cross-bedded, argillaceous, subrounded sands, minor gravels; thickness 0 to 400 feet.

Patuxent Formation: white or light gray to orange-brown, moderately sorted, cross bedded, argillaceous, angular sands and subrounded quartz gravels; silts and clays subordinate, predominantly pale gray; thickness 0 to 250 feet.

31

Groundwater supplies in the study area primarily originate from two major water-bearing formations, the Magothy and Patapsco-Raritan. The Patapsco-Raritan is an extremely productive groundwater source, yielding 3 to 2160 gpm. In the study area, the major water-bearing sands of this formation lie within 100 feet of the surface. The Magothy aquifer lies approximately 100 to 200 feet below the surface within the study area. This formation also has high potential for yielding from 5 to 400 gpm.

c. Soils

Soils in the study area belong to one major soil association:

Evesboro-Rumford-Sassafrass Association: Consists of gently sloping to moderately steep, excessively drained and well drained sandy and loamy soils.

Prime farmland Soils - A small portion of the study area has been classified by the U.S. Department of Agriculture, Soil Conservation Service as Prime Farmland Soils. There is no indication of any unique farmland within the study area.

d. Surface Water

The Magothy River tributaries of Cockey Creek, Blackhole Creek, Grays Creek, and Cornfield Creek provide drainage south of Maryland Route 177, while Bodkin Creek and Main Creek drain the area north of the roadway. Two impoundments, Cooks Pond and Fresh Pond are also located within the study area and drain into Main Creek and Cornfield Creek respectively.

The Maryland Department of Health and Mental Hygiene has classified all surface waters of the state into four (4) categories according to desired use.

These categories are:

- Class I - Water contact recreation, for fish, other aquatic life, and wildlife.
- Class II - Shellfish harvesting
- Class III - Natural Trout Waters
- Class IV - Recreational Trout Waters

All waters of the state are Class I, with additional protection provided by higher classifications. With the exception of the impoundments, all surface waters in the study area are designated Class II, for Shellfish harvesting.

e. Floodplains

The 100 year floodplain within the study area is located in the vicinity of Fresh Pond/Angel Bog. The floodplain limits, shown on the Alternates mapping are based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM).

f. Ecology

1) Terrestrial Habitat

The Maryland Route 177 study area consists of two major terrestrial habitat types. Woodland or forested areas can be identified and subdivided into the vegetation associations listed below:

Tulip Poplar Association: This association is characterized by the presence of tulip poplar in the absence of any other characteristic species. Common associated species include red maple, flowering dogwood, Virginia creeper, black gum, white oak, sassafrass, black cherry, grape, mockernut hickory, southern arrowwood, black locust, ironwood and poison ivy.

Chestnut Oak-Post Oak-Blackjack Oak Association: This association is recognized by the presence of any two of chestnut oak, post oak, and blackjack oak, usually visually distinctive because of stunted appearance and xeric characteristics. Associated species include Eastern chinguapin, sassafrass, Virginia pine, red cedar, and pitch pine. The shrub layer is comprised mainly of blueberries, huckleberries and mountain laurel.

33

2) Aquatic Habitat (see Alternates mapping)

Wetland areas potentially affected by the proposed project were identified using National Wetland Inventory Maps (U.S. Fish and Wildlife Service) and by field investigation.

Non-tidal wetlands are generally found in areas providing local drainage. Two non-tidal wetlands identified in the study area are associated with impoundments. These wetlands are classified by the U.S. Fish and Wildlife Service as follows:

Palustrine - Open Water

Palustrine - Scrub Shrub/Emergent - narrow leaf persistent

g. Endangered Species

Coordination with the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources indicates that no known federally listed threatened or endangered species have been recorded in the project area. See letters in the correspondence section.

6. Existing Air Quality

The Maryland Route 177 project is within the Metropolitan Baltimore Intrastate Air Quality Control Region. While only a portion of the region does not meet the primary standards for carbon monoxide (CO) the entire region 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 which is described in further detail in Section IV-E.

38

7. Existing Noise Conditions

Thirteen (13) noise sensitive areas (NSA) have been identified in the Maryland Route 177 study area. Descriptions of the noise areas are provided in Table 4. The location of the NSA's are shown in Figures 10 - 30. A copy of the technical analysis report is available at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland, 21202. .

TABLE 4

NOISE SENSITIVE RECEPTORS

<u>Noise Sensitive Receptor</u>	<u>Activity Category</u>	<u>Description</u>
1	B	One (1), 2-story frame single-family residence, located on the north side of Maryland Route 177, near the ramp to westbound Maryland Route 100.
2	B	One (1), 1-story frame single-family residence located on the north side of Maryland Route 177, near Schmidts Lane.
3	B	One (1), 2-story frame single-family residence located on the north side of Maryland Route 177, near Fairwood Drive.
4	B	One (1), 1-story frame single-family residence located on the north side of Maryland Route 177 near Oak Drive.
5	B	One (1), 2-story frame single-family residence located on the south side of Maryland Route 177, near Maryland Road.
6	B	One (1), 1-story single-family residence located on the south side of Maryland Route 177, near Rodkin Avenue.
7	B	Lake Shore Baptist Church. One-story brick with A/C, located on the south side of Maryland Route 177, near Maryland Avenue.
8	B	Gallilee Lutheran Church and School. One-story brick with A/C, located on the north side of Maryland Route 177, near Maryland Avenue.
9	B	One (1), 2-story frame single-family residence located on the south side of Maryland Route 177, near Old Mountain Road.

<u>Noise Sensitive Receptor</u>	<u>Activity Category</u>	<u>Description</u>
10	B	Mt. Carmel United Methodist Church. One-story frame and cinder block, located on north side of Maryland Route 177, near Long Point Road.
11	B	One (1), 1-story frame single-family residence located on the north side of Maryland Route 177, near Ventnor Road.
12	B	One (1), 1-story frame single family residence located on the south side of Maryland Route 177, near Pinehurst Road.

Highway traffic noise is usually measured on the "A" weighted decibel scale "dBA", which is the scale that has a frequency range closest to that of the human ear. In order to give a sense of perspective, a quiet rural night would register about 25 dBA, a quiet suburban night would register about 60 dBA, and a very noisy urban daytime about 80 dBA. Under typical field conditions, noise level changes of 2-3 dBA can barely be detected, with a 5 dBA change readily noticeable. A 10 dBA increase 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 & Newman, Inc. for FHWA, 1980).

The Federal Highway Administration has established, through the Federal-Aid Program Manual (FHPM) 7-7-3, noise abatement criteria for various land uses (see Table 5).

37

TABLE 5
NOISE ABATEMENT CRITERIA AND LAND USE RELATIONSHIPS
SPECIFIED IN FHPM 7-7-3

<u>ACTIVITY CATEGORY</u>	<u>Leq (h)</u>	<u>DESCRIPTION OF ACTIVITY CATEGORY</u>
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

These levels are expressed in terms of an Leq noise level which is the energy-averaged noise level for a one-hour time period. All ambient and predicted levels in this report are Leq exterior noise levels unless otherwise noted.

Measurement of ambient noise levels is intended to establish the basis for impact analysis. The ambient noise levels as recorded represent a generalized view of present noise levels. Variations with time of total traffic volume, truck traffic

volume, speed, etc., may cause fluctuations in ambient noise levels of several decibels. However, for the purposes of impact assessment, these fluctuations are not sufficient to significantly affect the assessment. Ambient noise levels were measured at noise sensitive areas in the Maryland Route 177 study area during the non-rush hour period based on the diurnal traffic curve.

It was determined for all the noise sensitive areas, the most typical noise conditions occur during the non-rush hour period (9:00 a.m. - 4:00 p.m.). During this time, the highest noise levels are experienced for the greatest length of time.

The results of the ambient measurements are included in Table 7 in Section IV-F along with the predicted noise levels.

II. NEED FOR THE PROJECT

II. NEED FOR THE PROJECT

A. Purpose

The purpose of this project is to improve the existing traffic levels of service and safety conditions on Maryland Route 177 between Maryland Route 100 and Pinehurst Road. The project is considered by Anne Arundel County elected officials as one of their highest transportation priorities.

The existing roadway width is insufficient to accommodate the large volume of existing and projected traffic. The narrow roadway width combined with the location of utilities adjacent to the roadway results in serious service and safety deficiencies. During peak hours, delays and congestion are caused by left turning vehicles at the numerous intersections. Narrow roadway width at intersections preclude continuous traffic flow at these locations. Vehicles attempting to enter Maryland Route 177 from the crossroads also are experiencing increasing delays. The conditions and restrictions prevalent along Maryland Route 177 indicate that the existing two lane facility cannot adequately move the large volume of traffic and is insufficient to accommodate projected traffic demands.

B. Project Background

This project is listed in the current 1985 Highway Needs Inventory and the Secondary Development and Evaluation Program of the Maryland Department of Transportation's Consolidated Transportation Program (CTP) for 1985-1990, although construction is not scheduled. The project conforms to the Regional Planning Council's General Development Plan, 1982 and Anne Arundel County's General Development Plan, 1978.

C. Existing and Projected Traffic Conditions

At present, the roadway segment from Woods Road to Bussenius Road has the heaviest recorded traffic volumes in the project area with a maximum average daily traffic volume (ADT) of 20,100 vehicles. Traffic demand in this area is projected to increase to 30,000 vehicles per day by 2015. Existing and projected truck usage comprises 4% of ADT.

Below are 1985 and projected 2015 traffic volumes at selected locations within the project limits:

Location	1985	2015
West of Maryland Route 100	8,500	12,400
East of Maryland Route 100	19,500	29,400
East of Woods Road	20,100	30,000
West of Long Point Road	9,500	15,300
East of Long Point Road	6,800	12,300
West of Pinehurst Road	4,400	9,300
East of Pinehurst Road	3,700	4,100

The ADT's for all alternates are shown in Figures 7 and 8.

Quality of traffic flow along a highway is measured in terms of level of service (LOS). This measure is dependent upon highway geometry and traffic characteristics and ranges from LOS "A" (Best) to LOS "C" (Minimum Desirable), to LOS "E" (Capacity), and LOS "F" (Worst or Forced Flow).

Level of service along the various segments is determined by operating characteristics at the intersections. The levels of service shown are for the peak hour condition.

LOS A is free flow, with low volumes and high speeds.

LOS B is the zone of stable flow, with operating speeds beginning to be restricted somewhat by traffic conditions, drivers, however, still have reasonable freedom to select their speed and lane of operation.

LOS C is still in the zone of stable flow, but speeds and maneuverability are more closely controlled by the higher volumes.

LOS D approaches unstable flow, with tolerable operating speeds being maintained though considerably affected by changes in operating conditions.

LOS E cannot be described by speed alone, but represents operations at even lower operating speeds than in level D, with volumes at or near the capacity of the highway.

LOS F describes forced flow operation at low speeds, where volumes are below capacity.

Below are the 1985 and projected 2015 Levels of Service at selected intersections within the project limits during A.M. and P.M. peaks:

Intersections	1985 LOS		2015 LOS	
		No Build	Alt. 2	Alt. 3
Woods Road Road	F/F	F/F	B/C	A/C
Lake Shore Drive	F/F	F/F	A/B	A/B
North Shore Drive	F/F	F/F	A/B	A/B
South Carolina Avenue	F/F	F/F	A/A	A/A
Hickory Point Road	F/F	F/F	A/A	A/A
Long Point Road	E/E	F/F	A/A	A/A
Ventnor Road	D/D	E/E	A/A	A/A
Pinehurst Road	C/C	D/D	A/A	A/A

D. Existing and Projected Safety Conditions

The existing Maryland Route 177, from Maryland Route 100 to Pinehurst Road, in Anne Arundel County, experienced a total of 253 accidents for the three year period of 1982 through 1984,

with an average accident rate of 414 accidents per 100 million vehicle miles of travel (accidents/100 mvm). This rate is significantly higher than the statewide average rate of 329 accidents/100 mvm for highways of similar design. These accidents resulted in an estimated accident cost of \$3.4 million/100 mvm. Listed below are the accidents indicating year and severity.

Severity	1982	1983	1984	Total
Fatal Accidents	0	2	0	2
Injury Accidents	40	47	47	134
Property Damage Only	34	35	48	117
Total Accidents	74	84	95	253

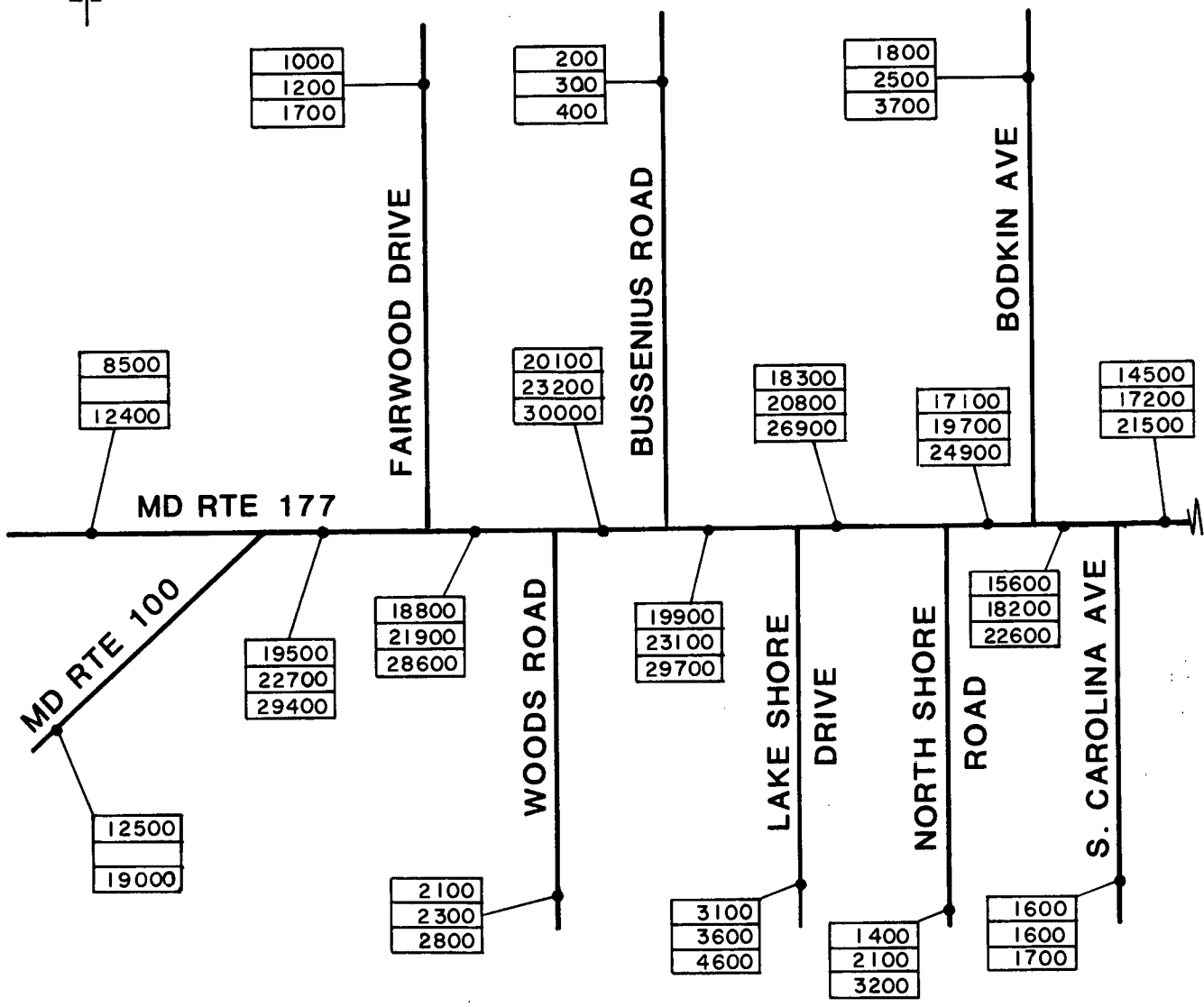
As indicated above, there were two fatal accidents. One of the fatal accidents, an angle collision, occurred at the intersection of Maryland Route 177 and Forest Glen Drive, the other was a fixed object accident and occurred just east of Ventnor Road.

Congestion and geometric deficiencies (sharp curves) are the major contributing factors to the accident experience. This is indicated by the fact that the rate of angle, rear end and fixed object accidents are significantly higher than the statewide average rates. These rates are listed below.

Manner of Collision	Existing Rate	Statewide Rate
Angle	70.41*	53.62
Rear End	101.52*	75.38
Fixed Object	137.55*	48.59
Opp. Direction	16.38	21.99
Sideswipe	22.93	22.01
Left Turn	21.29	30.51
Pedestrian	9.83	10.73
Parked	3.28	16.81

*Significantly higher than statewide average

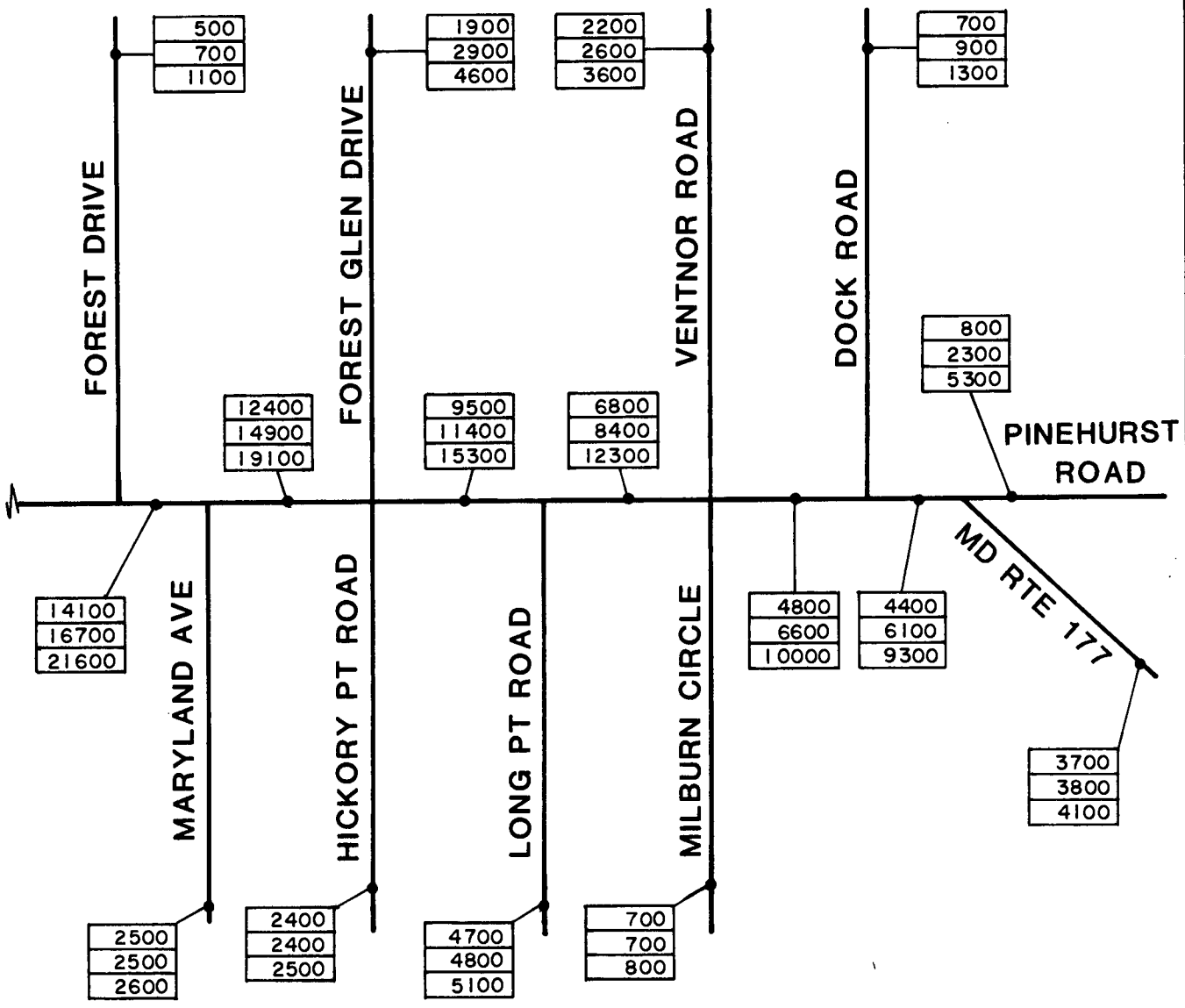
There were three sections of roadway meeting the criteria as a High Accident Location (HAL) during the study period. These



LEGEND

2100	1984 ADT
2300	1995 ADT
2800	2015 ADT

MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD		
AVERAGE DAILY TRAFFIC		
DATE	NO SCALE	FIGURE 7



LEGEND

2500	1984 ADT
2500	1995 ADT
2600	2015 ADT

MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD		
AVERAGE DAILY TRAFFIC		
DATE	NO SCALE	FIGURE 8

sections are listed below indicating year qualified and number of accidents experienced.

From .06 mile east of Alvin Road to .01 mile west of Forest Drive (1982-17 acc.)

From .17 mile west of Woodland Road to .02 mile west of Park Drive (1984-29 acc.)

From .02 mile west of Park Drive to .06 mile east of Alvin Road (1984-23 acc.)

Under the No-Build Alternate the rate of accidents to remain about the same and the number of accidents is expected to increase as traffic volumes increase.

Under consideration as a Build Alternate is the widening of Maryland Route 177 to a four-lane, undivided highway from Maryland Route 100 to Long Point Road. From Long Point Road to Pinehurst Road, Maryland Route 177 would be a three-lane highway with a two-way continuous center left turn lane. If this Alternate is implemented, it is anticipated that the four-lane portion to experience a reduction in the rate of angle and rear end accidents by approximately 50 percent over the existing two lane roadway. The three-lane portion should experience reductions in the rate of angle accidents by 61 percent, rear end accidents by 8 percent, and left turn accidents by 27 percent. These reductions are determined when compared to the two-lane roadway now present. Based on the anticipated accident reductions this Alternate is expected to experience an overall rate of 330 accidents/100 mvm. These accidents would result in an accident cost of approximately \$1 million/100 mvm and create a societal savings of \$2.4 million/100 mvm when compared to the cost of the existing roadway's accident experience.

47

Another Build Alternate under consideration is the widening of Maryland Route 177 to five-lanes with a two-way continuous center left turn lane from Maryland Route 100 to Long Point Road. Again, from Long Point Road to Pinehurst Road, Maryland Route 177 would be a three-lane highway with a two-way continuous center left turn lane. If this Alternate is implemented, it is expected that, along the new five-lane portion, the rate of angle accidents to decrease by 81 percent, rear end accidents by 54 percent and left turn accidents by 27 percent. The accident rate for the three lane portion of this Alternate would be the same as for the three-lane portion in the previous Alternate. This Alternate is expected to experience an overall rate of 300 accidents/100 mvm, with a cost savings of \$2.6 million/100 mvm when compared to the cost of the existing roadway's accident experience. This Alternate would also result in an accident cost savings of \$220,000/100 mvm when compared to the projected accident experience of the proposed four-lane/three-lane Alternate.

In conclusion, while both of the proposed Build Alternates could reduce the rate of accidents, the Build Alternate involving the five-lane segment appears to have the potential to reduce the accident rate by the greatest extent.

III. ALTERNATES CONSIDERED

III. ALTERNATES CONSIDERED

A. Interim Improvement

During the Spring of 1986, a 2.1 mile section of existing Maryland Route 177 will be widened from Maryland Route 100 to Maryland Avenue. It will be upgraded to a 3 lane roadway comprised of one travel lane in each direction with a continuous two-way left turn center lane. The construction generally will be contained within the state owned 40'± of right-of-way.

This improvement will satisfy immediate and interim traffic demands but will not satisfy future long term traffic requirements.

B. Alternates for Detailed Studies

Alternate 1 (No-Build)

Under the No-Build Alternate there would be no significant improvements to existing Maryland Route 177 within the study area between the terminus of Maryland Route 100 and the Pinehurst Road intersection other than the currently planned widening to three lanes between Maryland Route 100 and Maryland Avenue.

The No-Build Alternate would provide no significant improvements to traffic operations and capacity or safety for vehicles and pedestrians. As traffic growth occurs, the congestion and delays on the existing road will undoubtedly worsen.

Alternate 2 (4-Lane Curbed Roadway)

Alternate 2 would provide a 4 lane roadway comprised of 2 travel lanes in each direction for the portion of Maryland Route 177 between the terminus of Maryland Route 100 and the Long Point Road intersection where it would transition to a 3 lane roadway.

50

All Build Alternates include a three lane widening improvement from Long Point Road to the Pinehurst Road intersection.

The 4 lane section would have 52 feet width of paving between curbs and the 3 lane section would have 41 feet width of paving between curbs. The middle lane of the 3 lane section would be designated as a continuous left turn lane for the numerous driveway connections and intersecting streets in the area. Sidewalks would be provided on both sides of the roadway.

The construction under Alternate 2 would generally follow the existing roadway centerline. It would include improvements to both vertical and horizontal alignments of the existing roadway to conform to a design speed of 50 mph. A strip of new right-of-way would be required along both sides of the roadway.

Alternate 2A (4 Lane Curbed Roadway with Left Turn Lanes at Major Intersections)

Alternate 2A would be essentially the same as Alternate 2 with the exception that the 4 lane section between Maryland Route 100 and Long Point Road intersection would transition to 5 lanes at each of the major intersections to provide for storage of left turning vehicles.

The 3 lane section described for Alternate 2 east of Long Point Road would also be included under Alternate 2A.

Alternate 3 (5 Lane Curbed Roadway)

Alternate 3 would provide for a 5 lane roadway comprised of 2 travel lanes in each direction and one continuous left turn lane in the middle of the roadway between the terminus of Maryland Route 100 and the Long Point Road intersection.

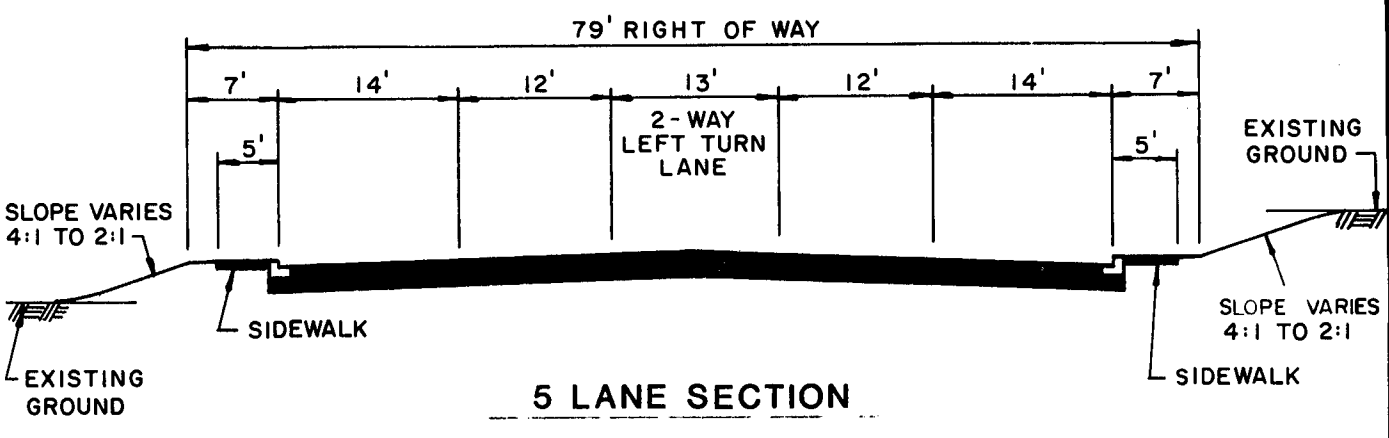
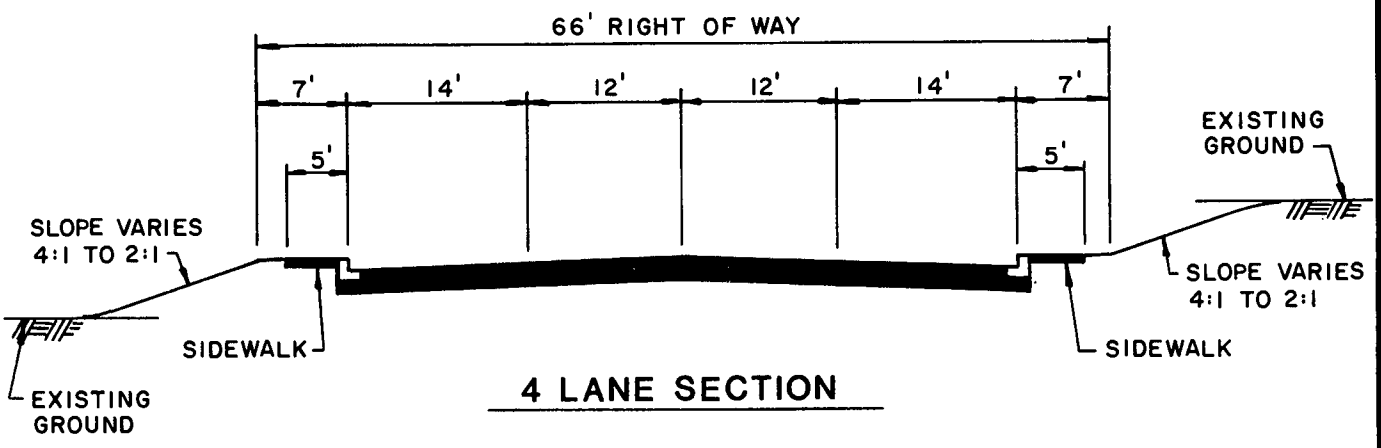
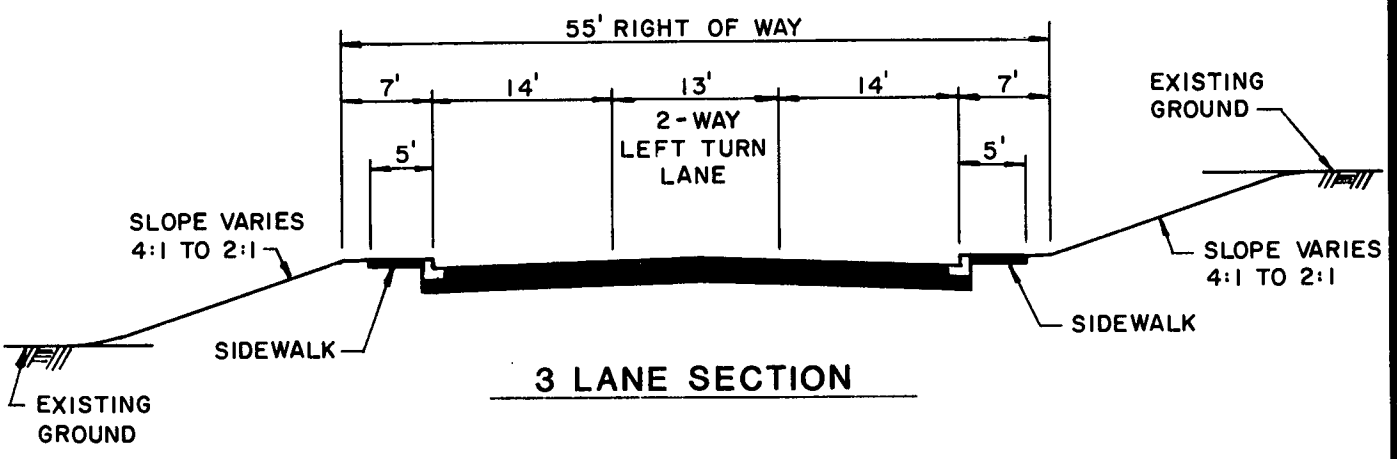
East of Long Point Road, the 5 lane section would transition to a 3 lane section which would provide for one travel lane in each direction and a center lane to be used as a continuous left turn lane.

The width of paving between curbs for the 5 lane section would be 65 feet and the width of paving between curbs for the 3 lane alternate would be 41 feet. Sidewalks would be provided on both sides of the roadway.

As under Alternates 2 and 2A, Alternate 3 would generally follow the existing roadway centerline. This would require improvements to the horizontal and vertical alignment of the existing roadway to conform to a design speed of 50 mph. A strip of new right of way would be required along both sides of the roadway.

Alignments to Avoid Wetlands

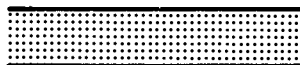
These alignments are identical to the Build Alternate alignments except in the vicinity of Fresh Pond/Angel Bog, where for each alternate, the alignment is shifted approximately 50 feet to the south (see Figures 10 - 30). This avoids construction within Angel Bog but entails two additional residential displacements and the taking of a portion of a food store's parking lot. The avoidance alignments would conform to the 50 mph design speed.



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

MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
TYPICAL SECTIONS		
DATE	NO SCALE	FIGURE
		9

LEGEND



PROPOSED ROADWAY



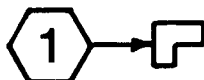
EXISTING PAVING TO BE REMOVED



PROPOSED RIGHT OF WAY



EXISTING RIGHT OF WAY LINE



NOISE AND AIR RECEPTOR LOCATION



100 - YEAR FLOODPLAIN



WETLANDS

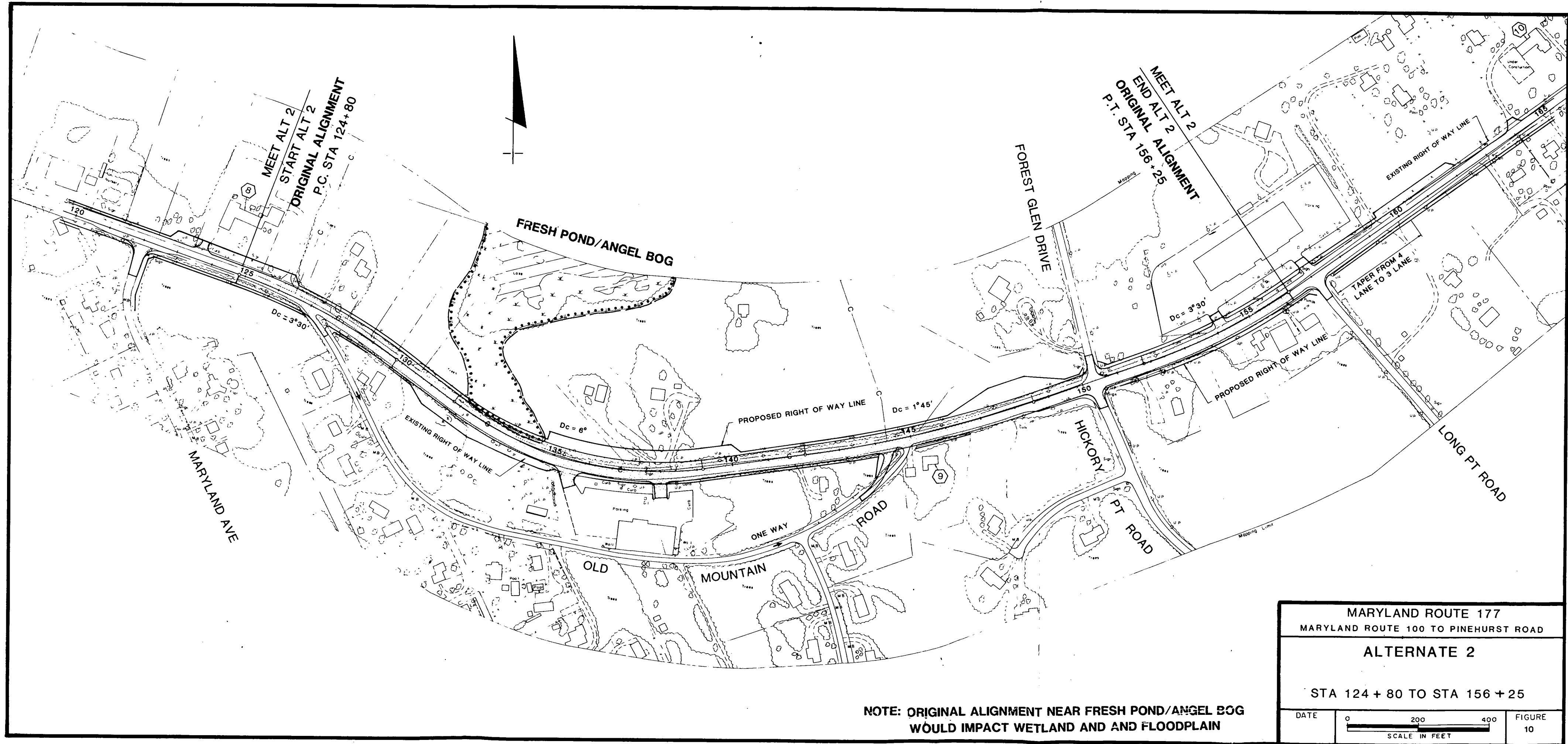


HISTORIC DISTRICT/SITE BOUNDARY



AREA OF CRITICAL STATE CONCERN

MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD		
PLAN LEGEND		
DATE		FIGURE



MEET ALT 2
START ALT 2
ORIGINAL ALIGNMENT
P.C. STA 124+80

MEET ALT 2
END ALT 2
ORIGINAL ALIGNMENT
P.T. STA 156+25

FRESH POND/ANGEL BOG

MARYLAND AVE

FOREST GLEN DRIVE

OLD MOUNTAIN ROAD

HICKORY PT ROAD

LONG PT ROAD

PROPOSED RIGHT OF WAY LINE

PROPOSED RIGHT OF WAY LINE

TAPER FROM 4 LANE TO 3 LANE

EXISTING RIGHT OF WAY LINE

Dc = 3°30'

Dc = 6°

Dc = 1°45'

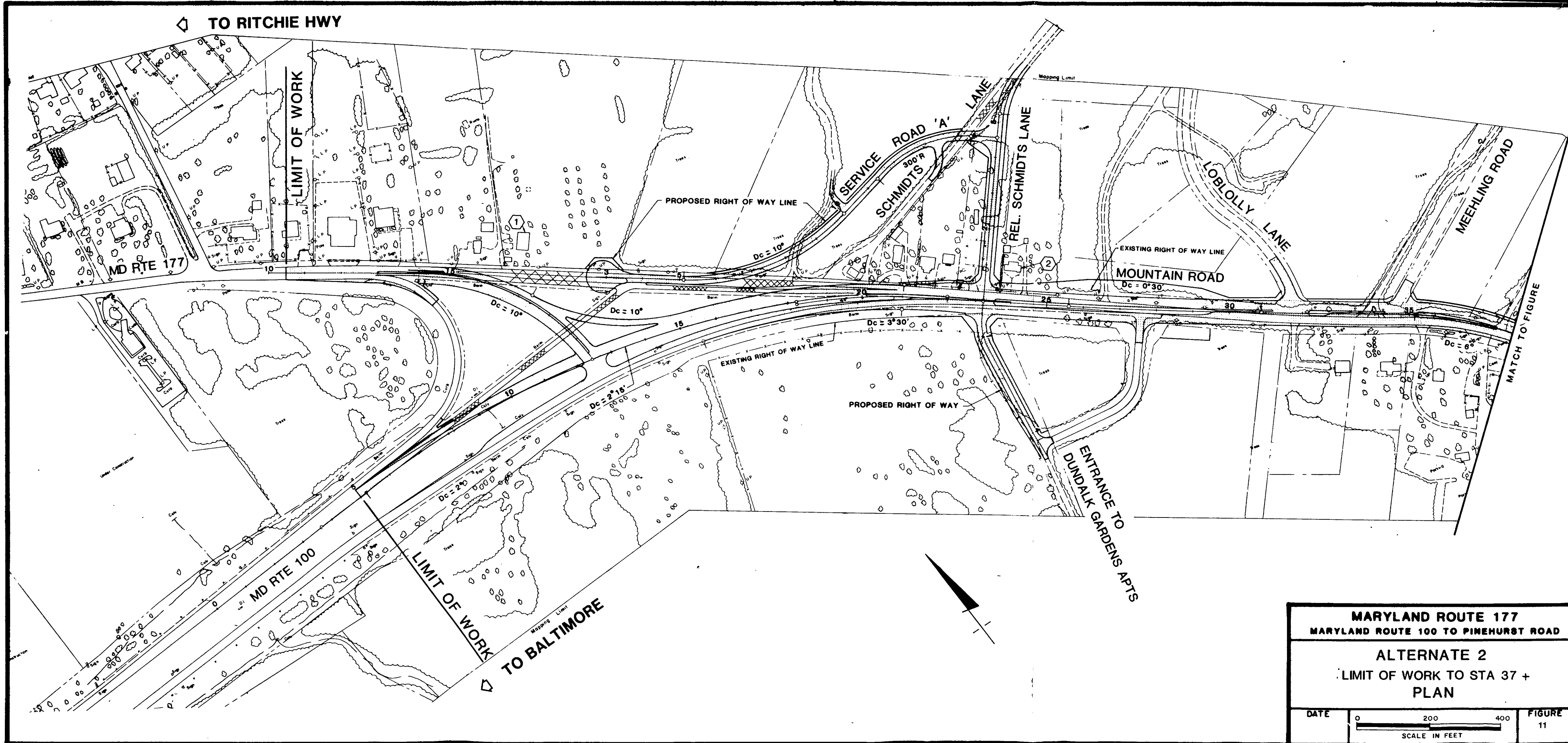
Dc = 3°30'

ONE WAY

ROAD

NOTE: ORIGINAL ALIGNMENT NEAR FRESH POND/ANGEL BOG
WOULD IMPACT WETLAND AND AND FLOODPLAIN

MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 2		
STA 124 + 80 TO STA 156 + 25		
DATE	 SCALE IN FEET	FIGURE 10



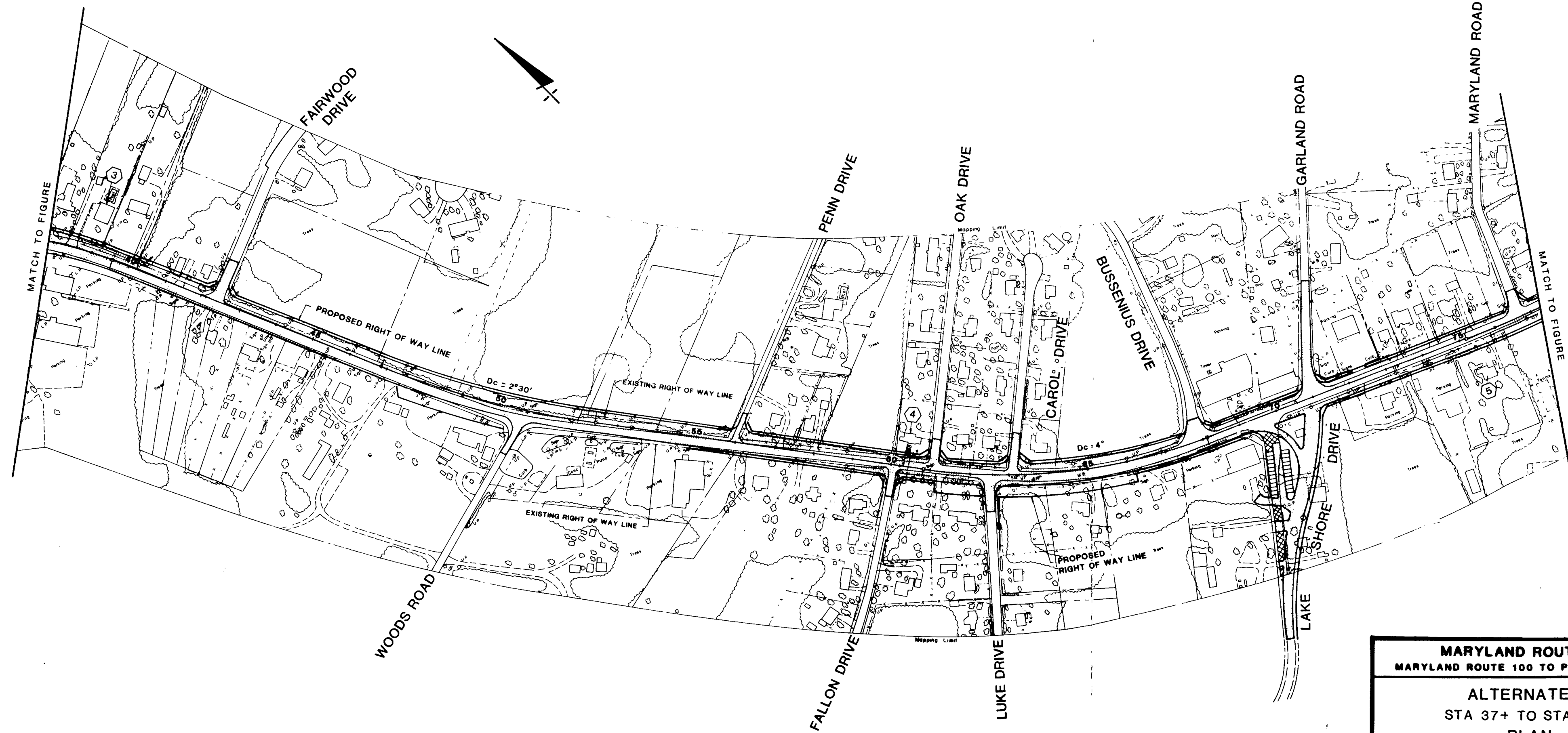
MARYLAND ROUTE 177
MARYLAND ROUTE 100 TO PINEHURST ROAD

ALTERNATE 2
LIMIT OF WORK TO STA 37 +
PLAN

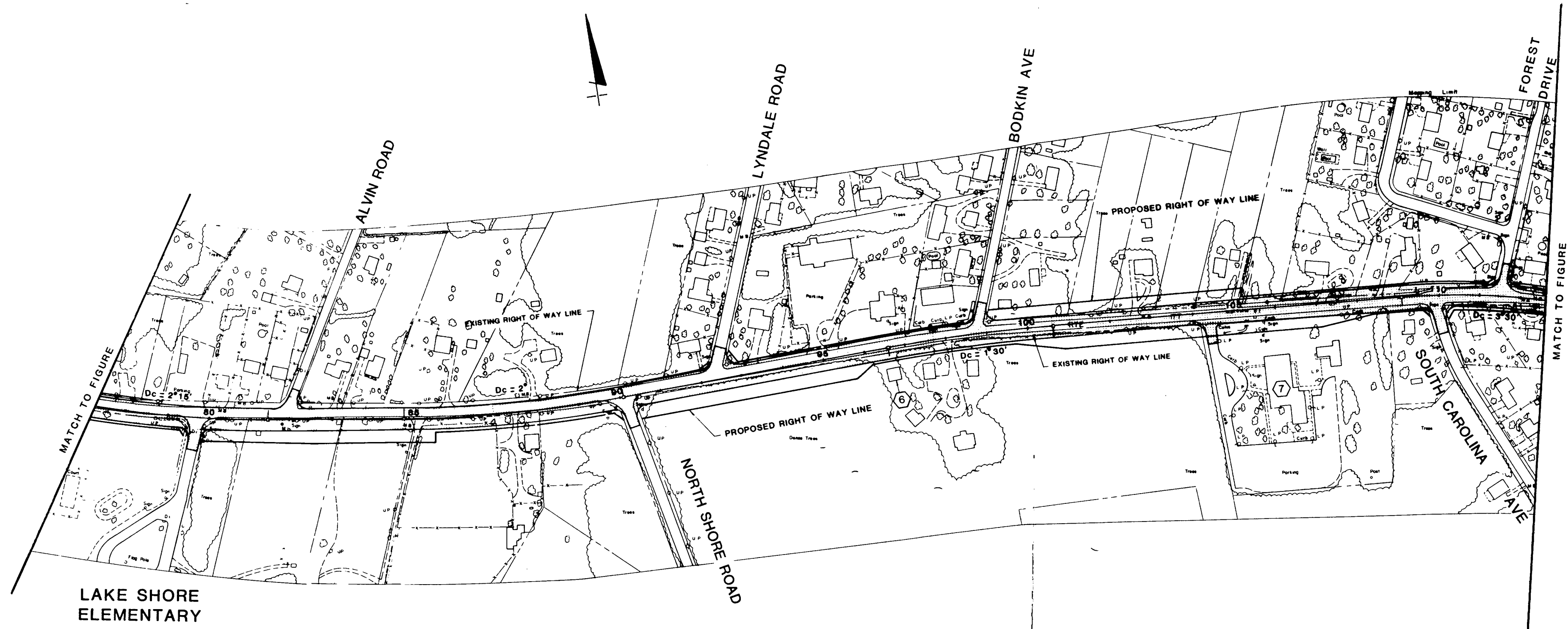
DATE _____

0 200 400
 SCALE IN FEET

FIGURE
 11

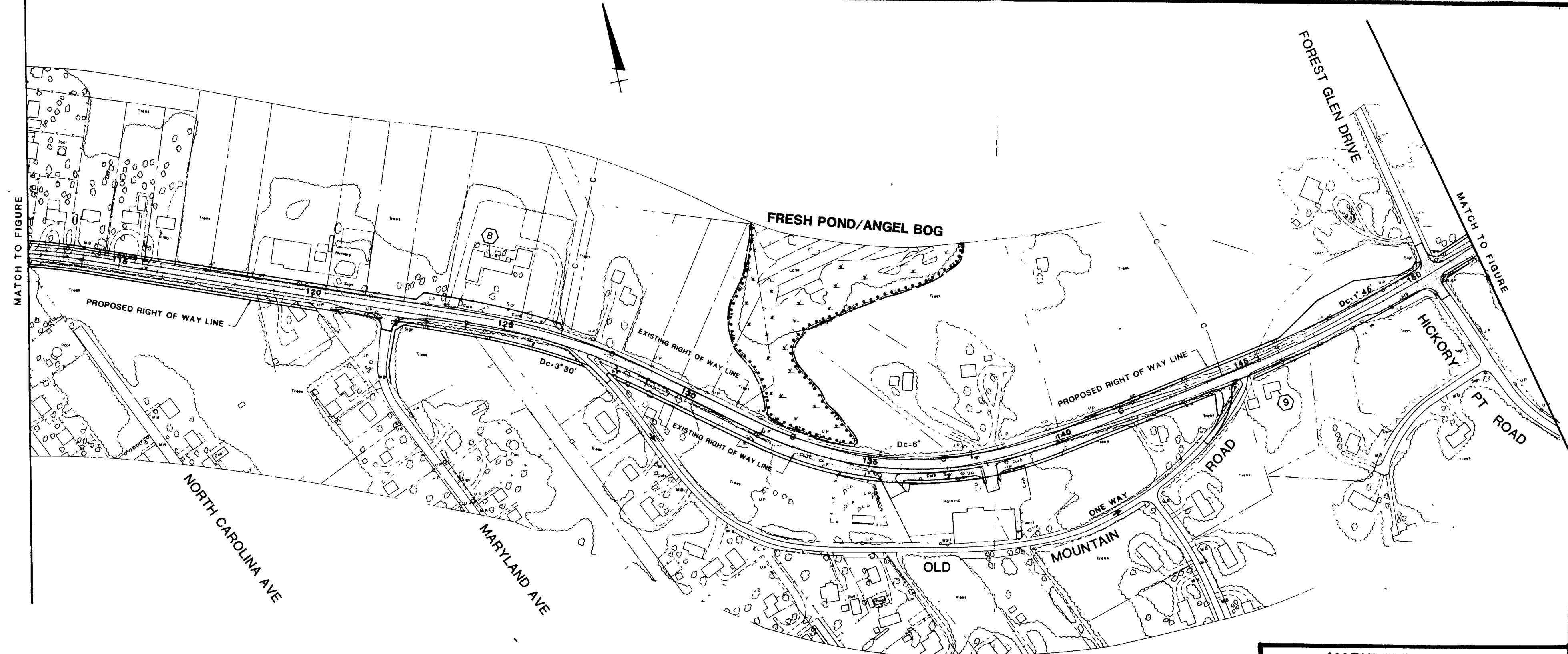


MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 2		
STA 37+ TO STA 77+		
PLAN		
DATE	<p>SCALE IN FEET</p>	FIGURE 12



LAKE SHORE
ELEMENTARY

MARYLAND ROUTE 177	
MARYLAND ROUTE 100 TO PINEHURST ROAD	
ALTERNATE 2	
STA 77+ TO STA 112+	
PLAN	
DATE	0 200 400
	SCALE IN FEET
	FIGURE 13

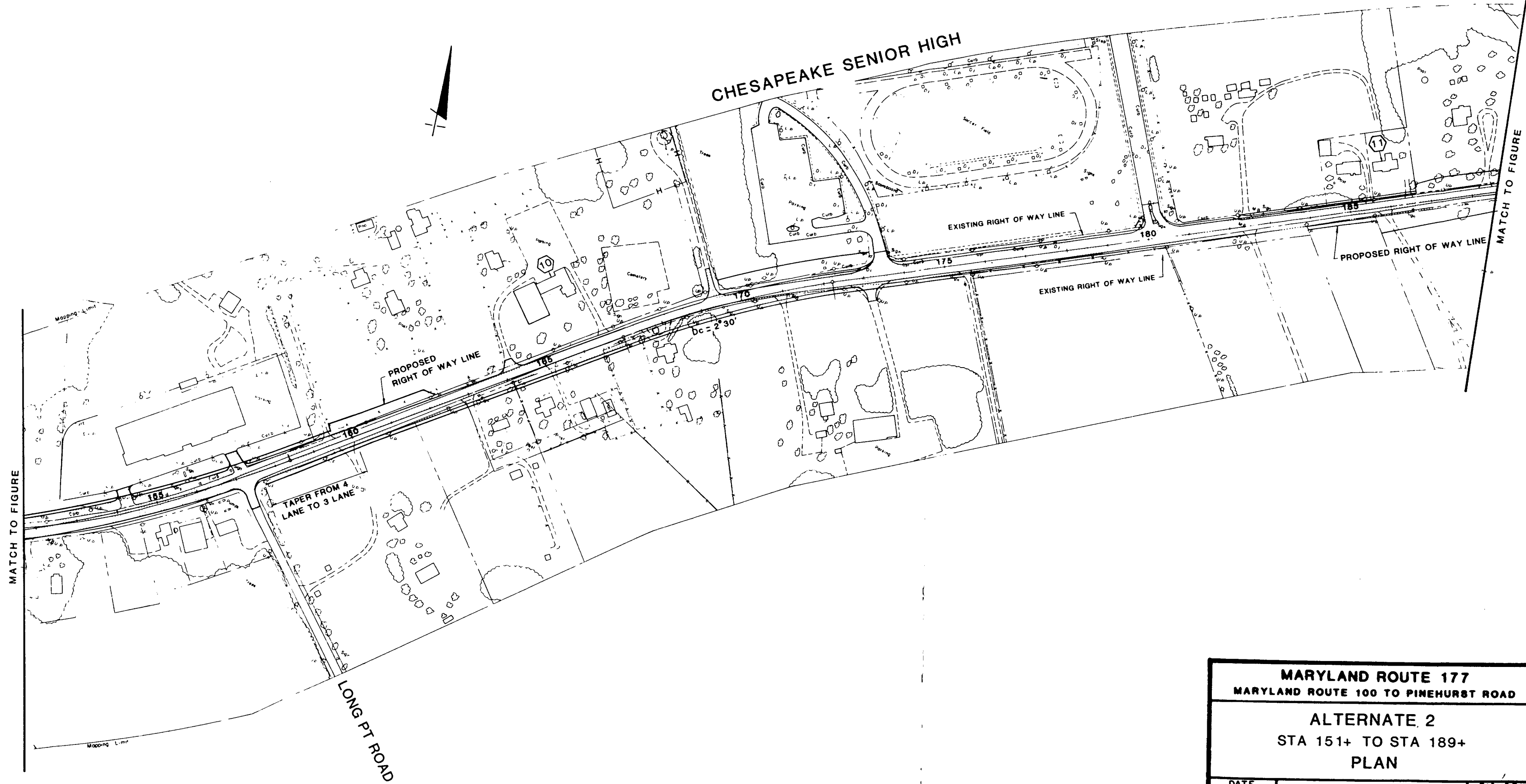


NOTE: INCLUDES ALIGNMENT SHIFT TO AVOID WETLAND AND FLOODPLAIN IMPACTS

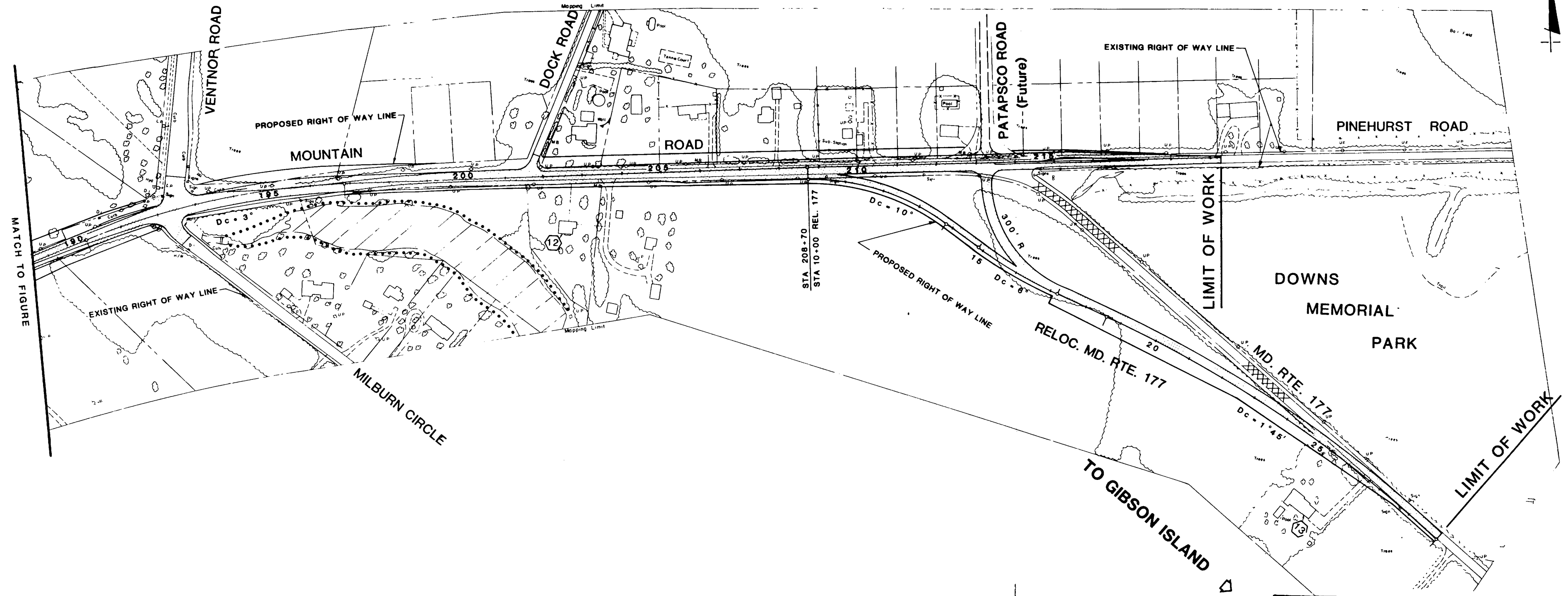
MARYLAND ROUTE 177
MARYLAND ROUTE 100 TO PINEHURST ROAD

ALTERNATE 2
STA 112+ TO STA 151+
PLAN

DATE	0 200 400	FIGURE
	SCALE IN FEET	14



MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 2		
STA 151+ TO STA 189+		
PLAN		
DATE	 SCALE IN FEET	FIGURE 15



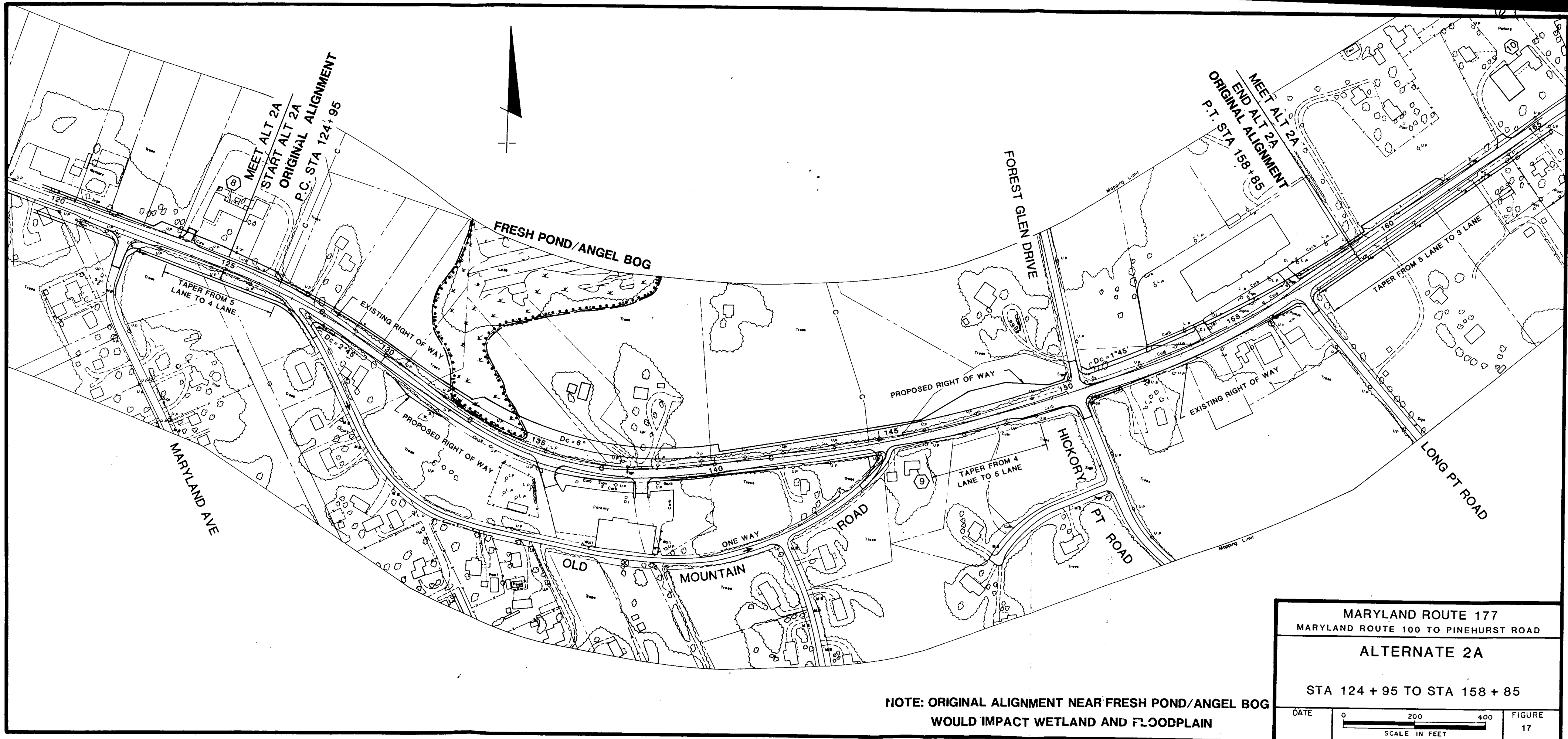
MARYLAND ROUTE 177
MARYLAND ROUTE 100 TO PINEHURST ROAD

ALTERNATE 2
STA 189 + TO LIMIT OF WORK
PLAN

DATE _____

0 200 400
 SCALE IN FEET

FIGURE
 16



MEET ALT 2A
 START ALT 2A
 ORIGINAL ALIGNMENT
 P.C. STA 124+95

MEET ALT 2A
 END ALT 2A
 ORIGINAL ALIGNMENT
 P.T. STA 158+85

FRESH POND/ANGEL BOG

FOREST GLEN DRIVE

MARYLAND AVE

OLD MOUNTAIN ROAD

HICKORY PT ROAD

LONG PT ROAD

PROPOSED RIGHT OF WAY

EXISTING RIGHT OF WAY

EXISTING RIGHT OF WAY

TAPER FROM 5 LANE TO 4 LANE

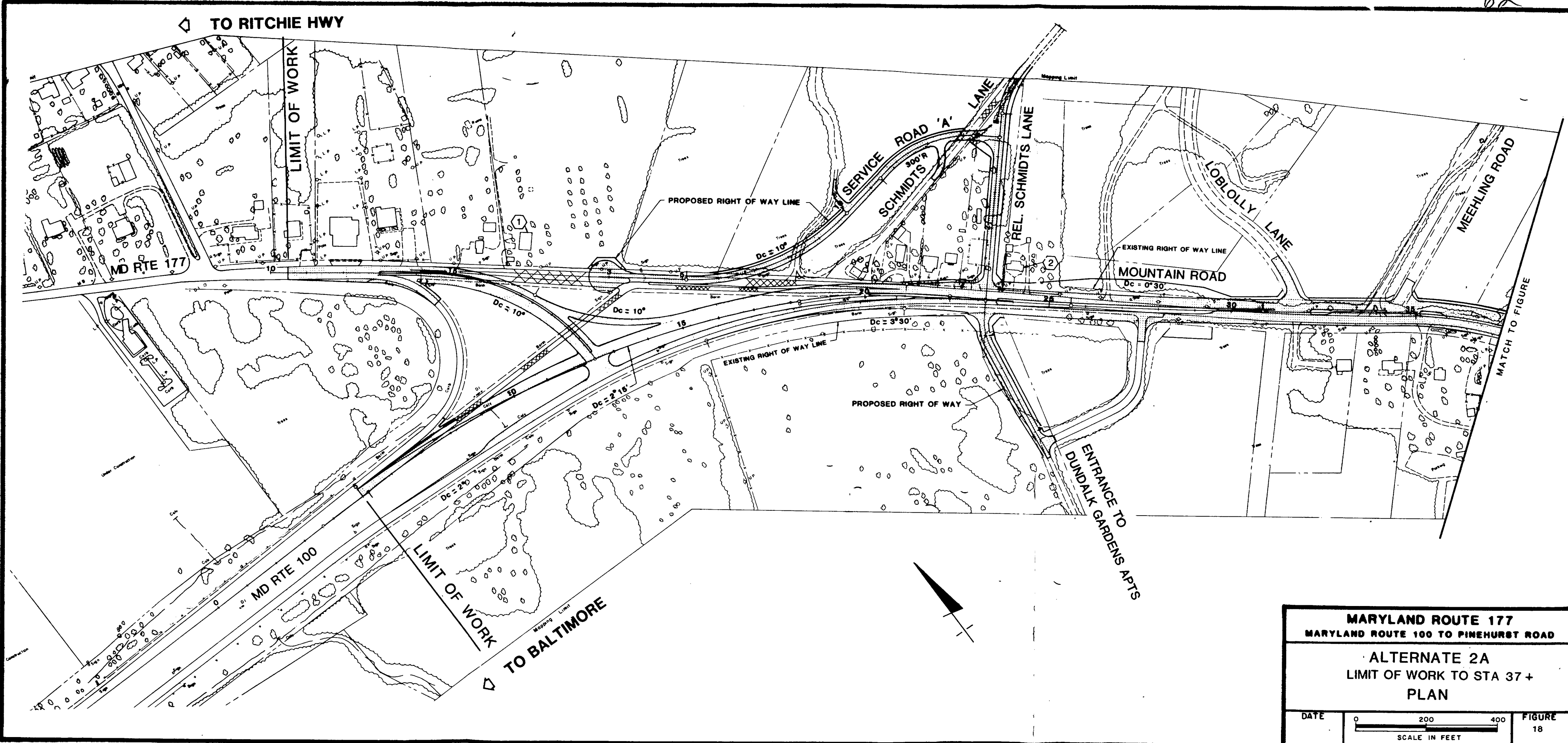
TAPER FROM 4 LANE TO 5 LANE

TAPER FROM 5 LANE TO 3 LANE

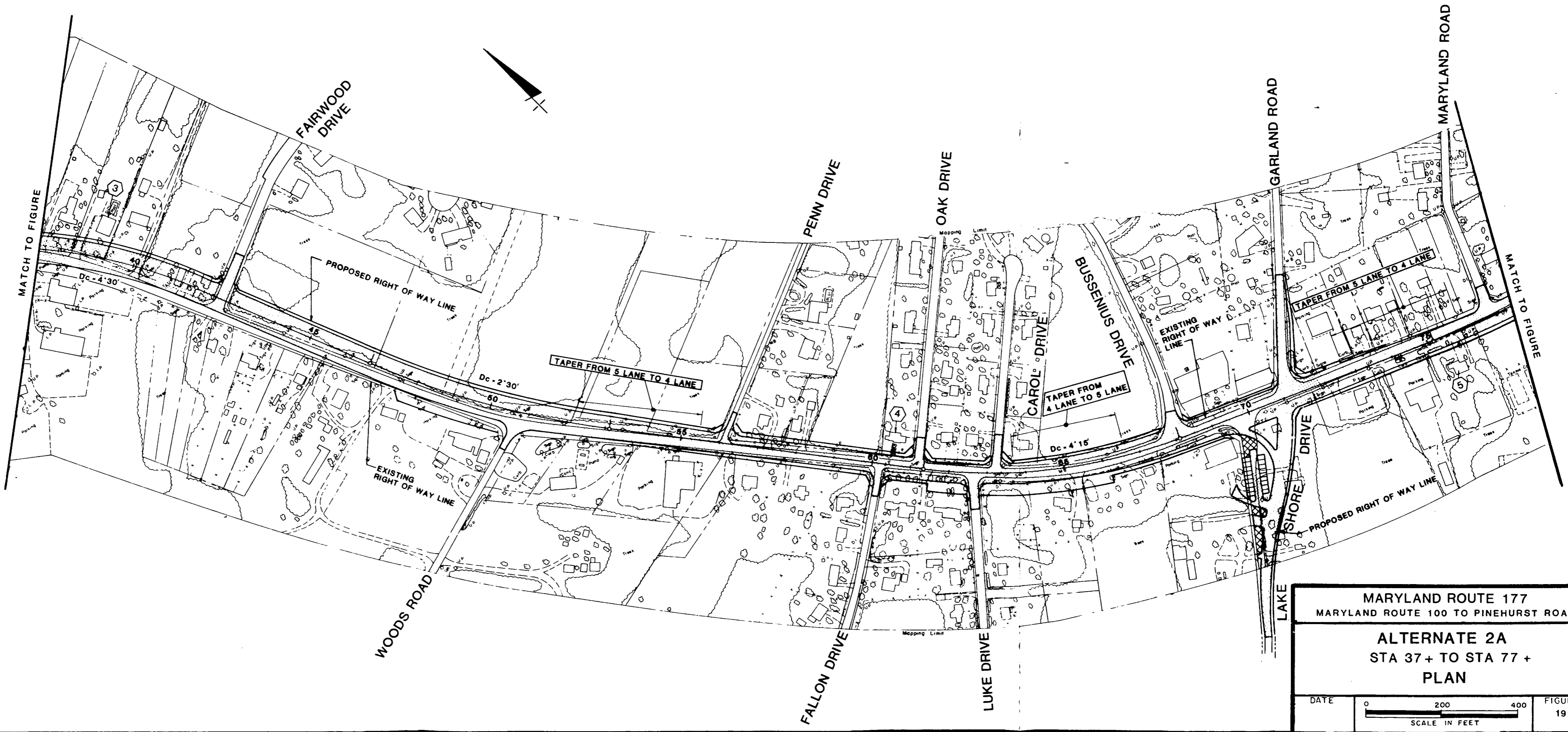
ONE WAY

NOTE: ORIGINAL ALIGNMENT NEAR FRESH POND/ANGEL BOG
 WOULD IMPACT WETLAND AND FLOODPLAIN

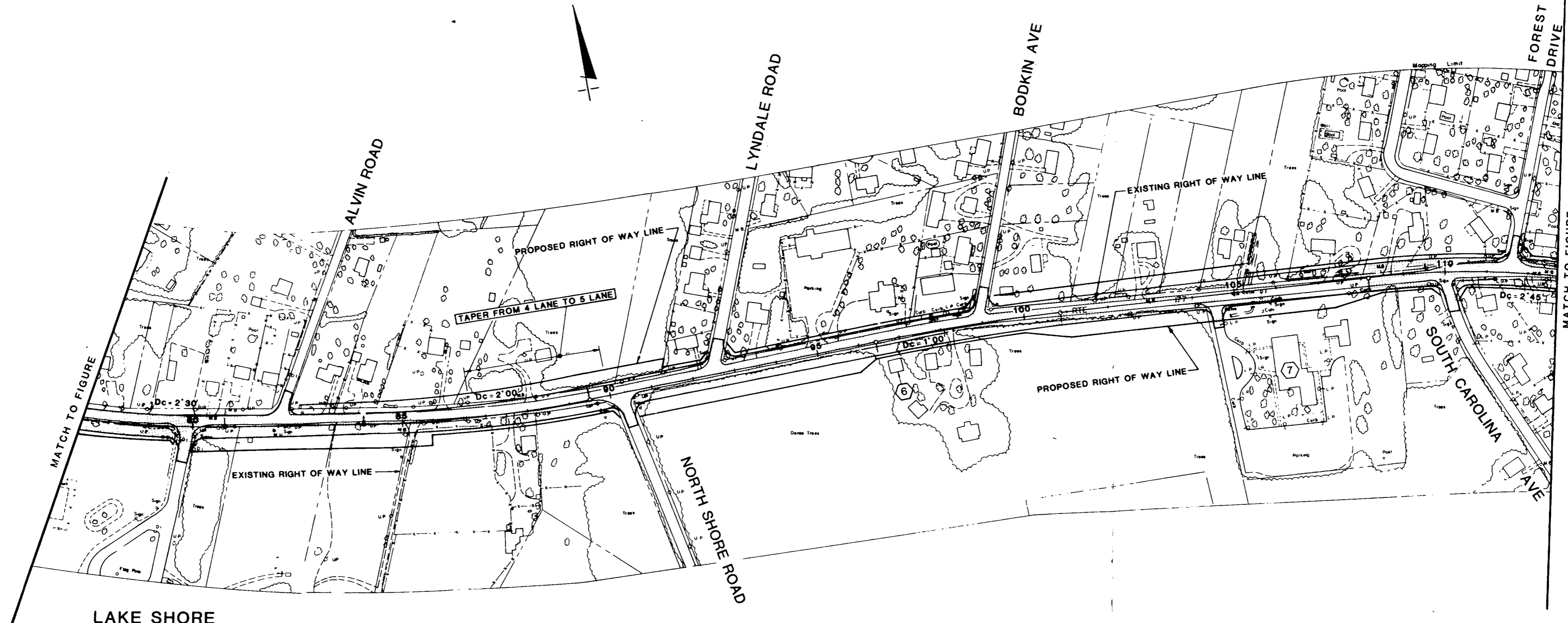
MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 2A		
STA 124 + 95 TO STA 158 + 85		
DATE	0 200 400 SCALE IN FEET	FIGURE 17



MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 2A		
LIMIT OF WORK TO STA 37 +		
PLAN		
DATE	0 200 400 SCALE IN FEET	FIGURE 18



MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD	
ALTERNATE 2A STA 37+ TO STA 77+ PLAN	
DATE	FIGURE
 SCALE IN FEET	
	19

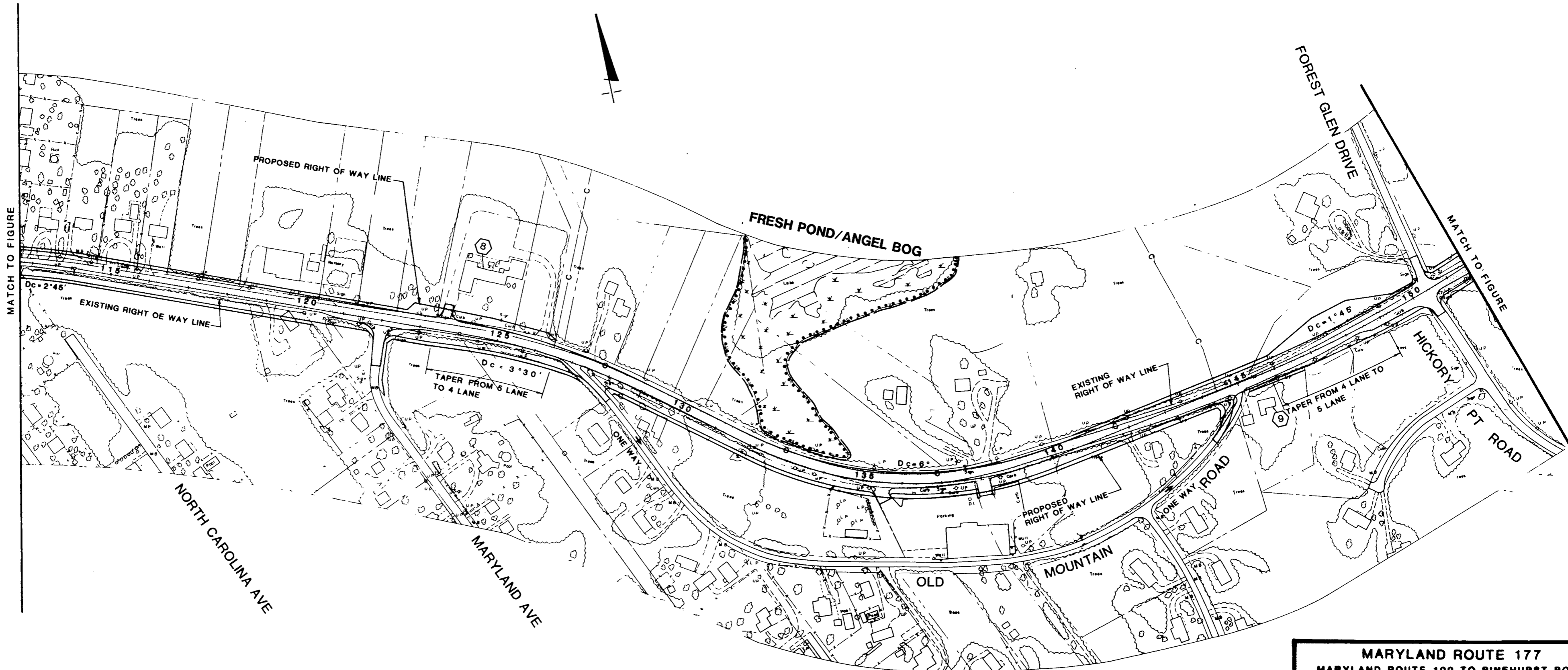


LAKE SHORE
ELEMENTARY

MARYLAND ROUTE 177
MARYLAND ROUTE 100 TO PINEHURST ROAD

ALTERNATE 2A
STA 77+ TO STA 112+
PLAN

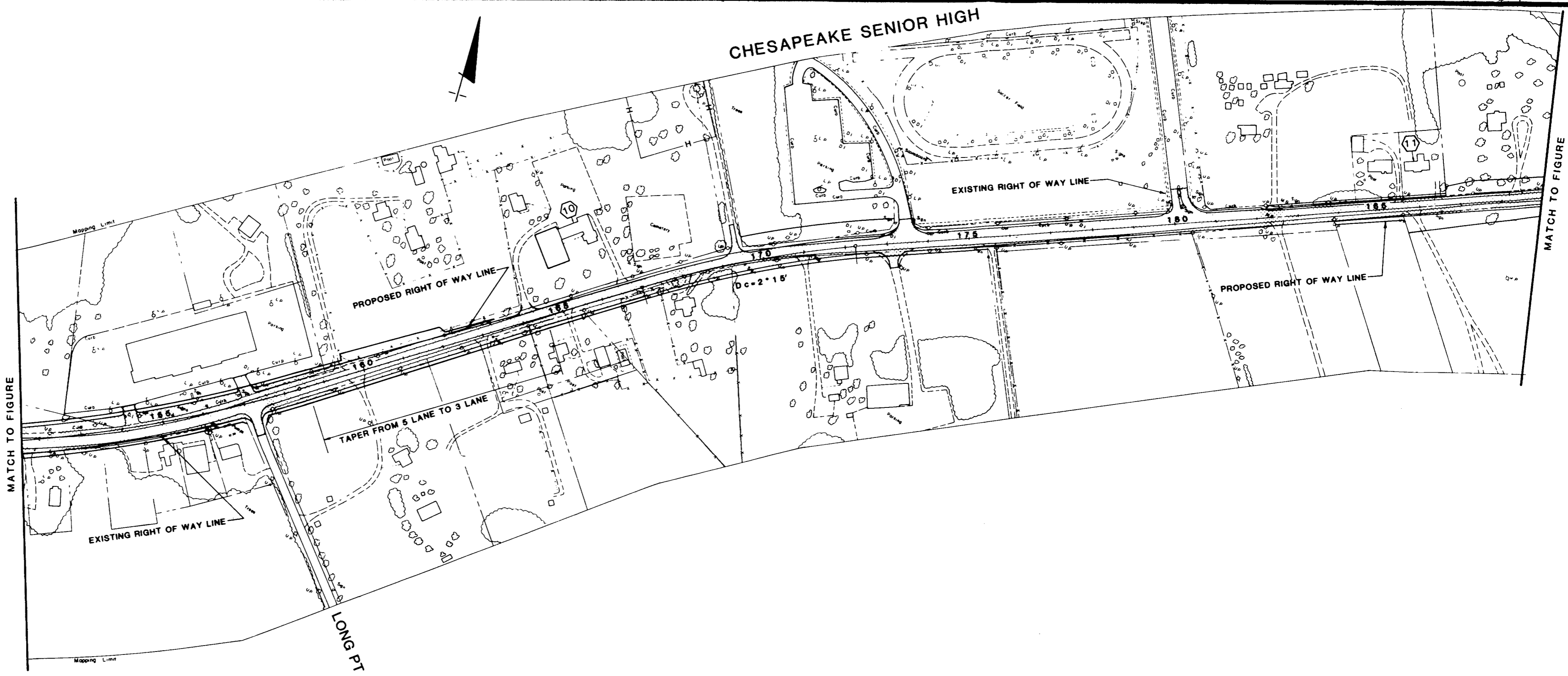
DATE	0 200 400 SCALE IN FEET	FIGURE 20
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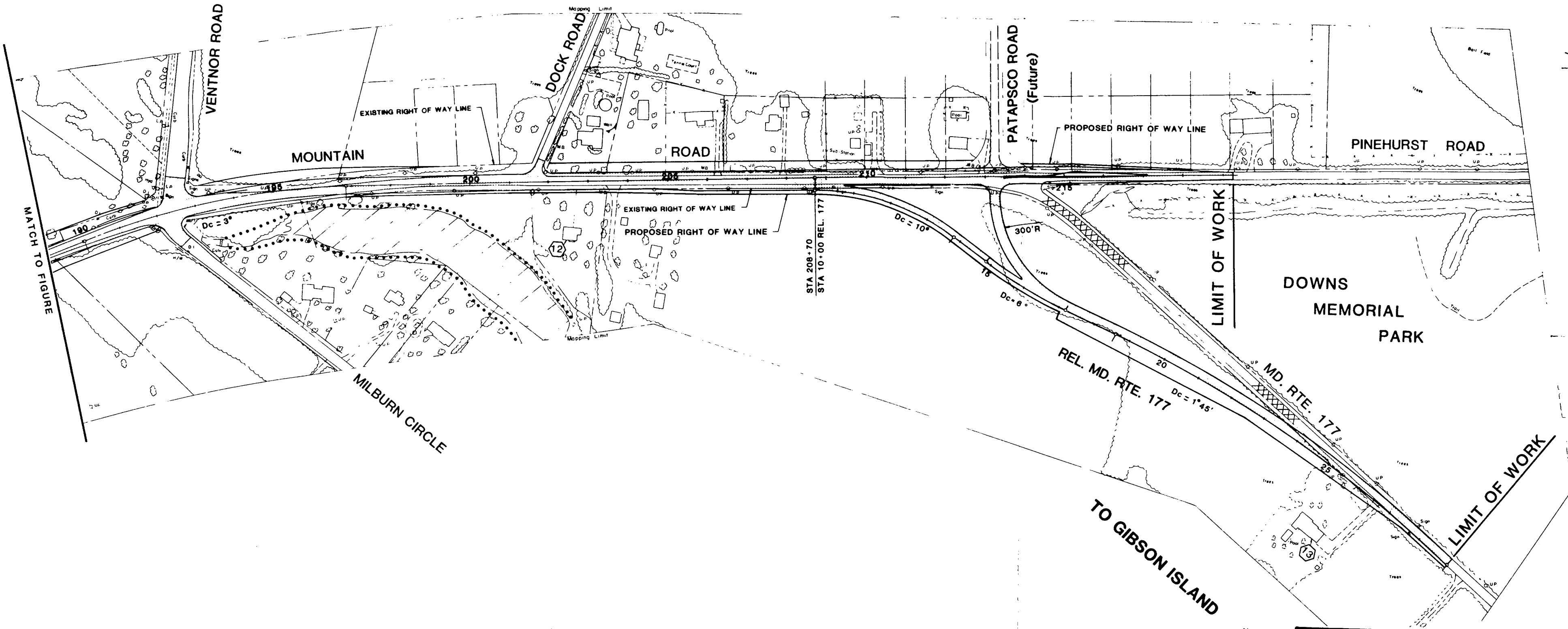
NOTE: INCLUDES ALIGNMENT SHIFT TO AVOID WETLAND AND FLOODPLAIN IMPACTS

MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 2A		
STA 112 + TO STA 151 +		
PLAN		
DATE	0 200 400	FIGURE
	SCALE IN FEET	21

64



<p>MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD</p>		
<p>ALTERNATE 2A STA 151+ TO STA 189 + PLAN</p>		
DATE	<p>SCALE IN FEET</p>	<p>FIGURE 22</p>

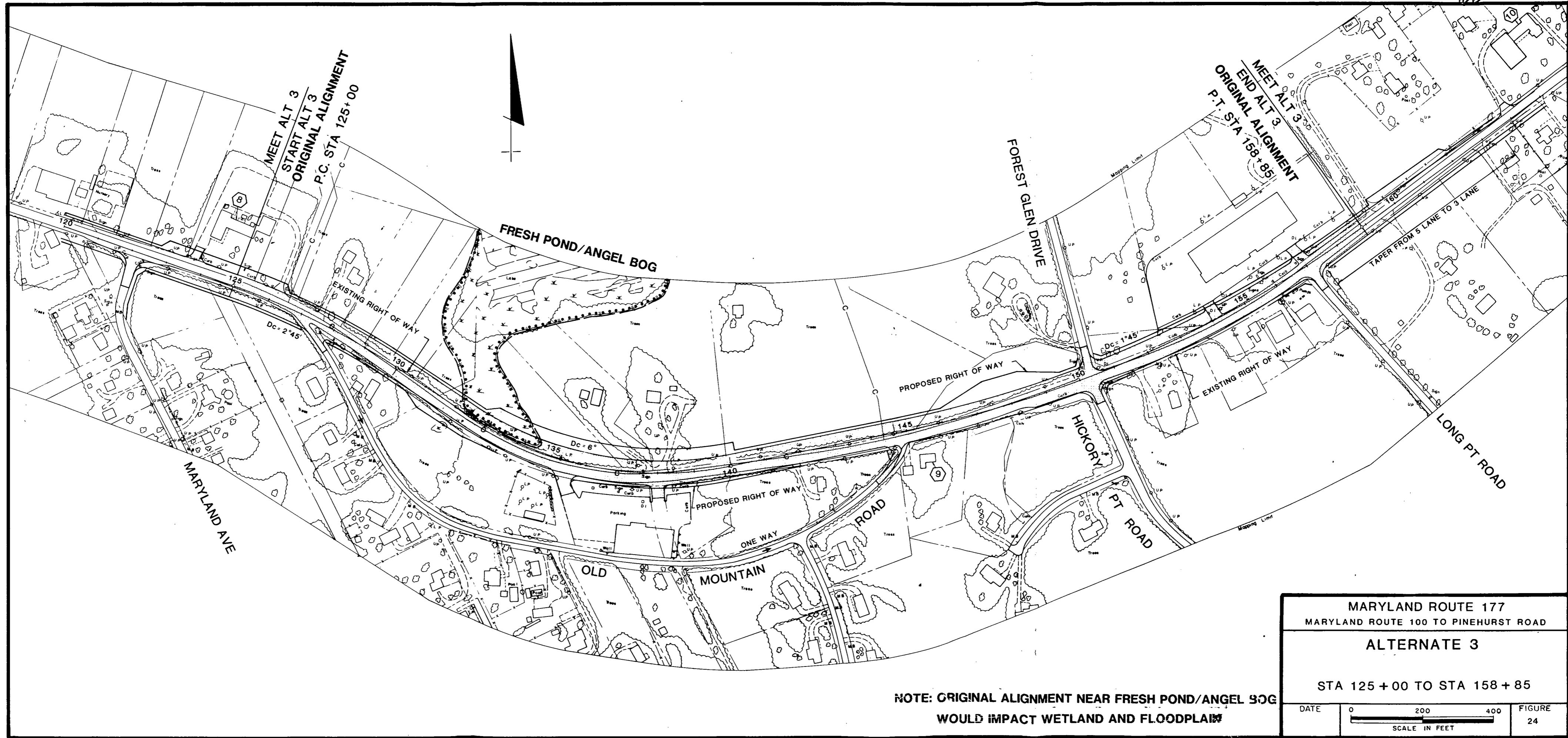


MATCH TO FIGURE

LIMIT OF WORK

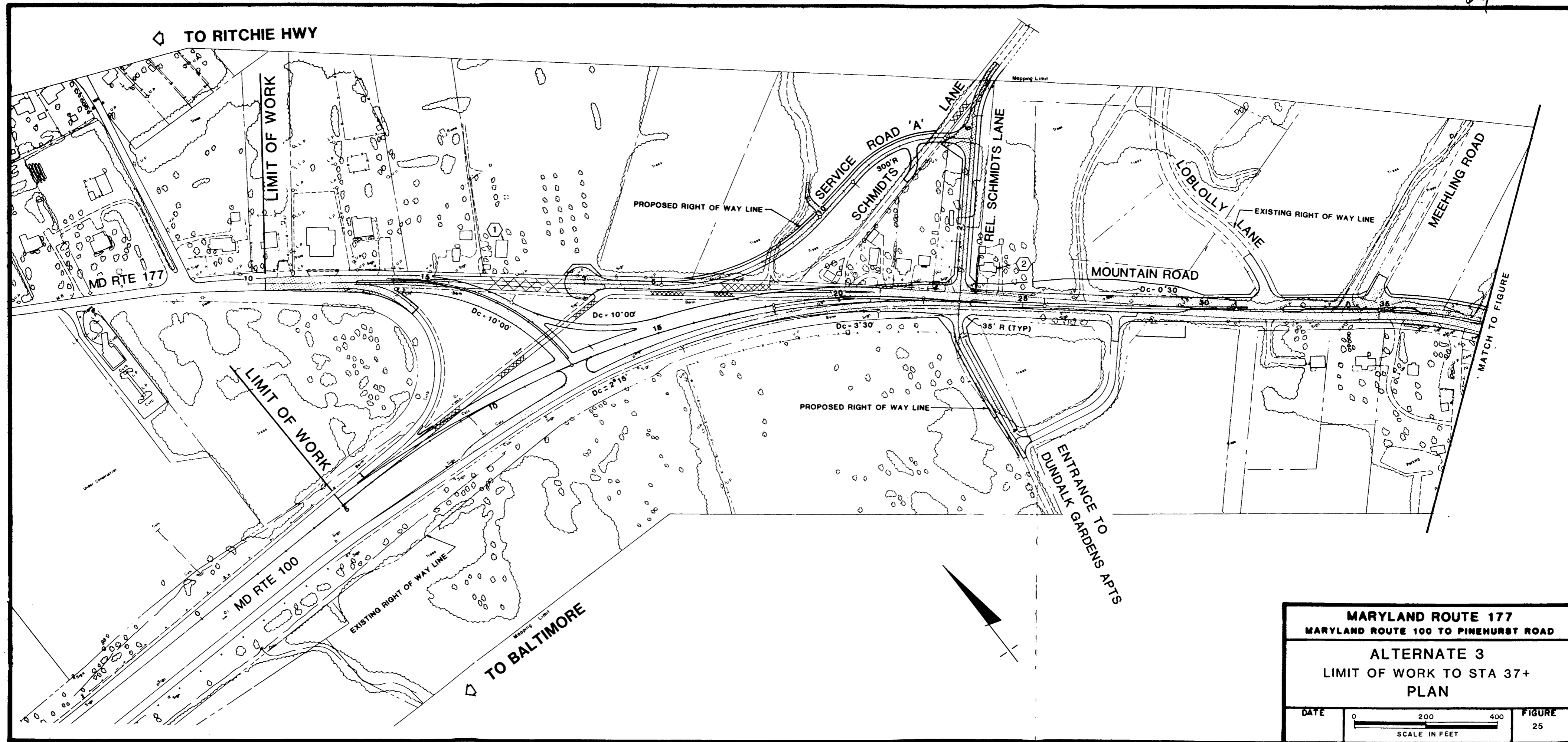
LIMIT OF WORK

<p>MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD</p>		
<p>ALTERNATE 2A STA 189+ TO LIMIT OF WORK PLAN</p>		
<p>DATE</p>	<p>0 200 400 SCALE IN FEET</p>	<p>FIGURE 23</p>

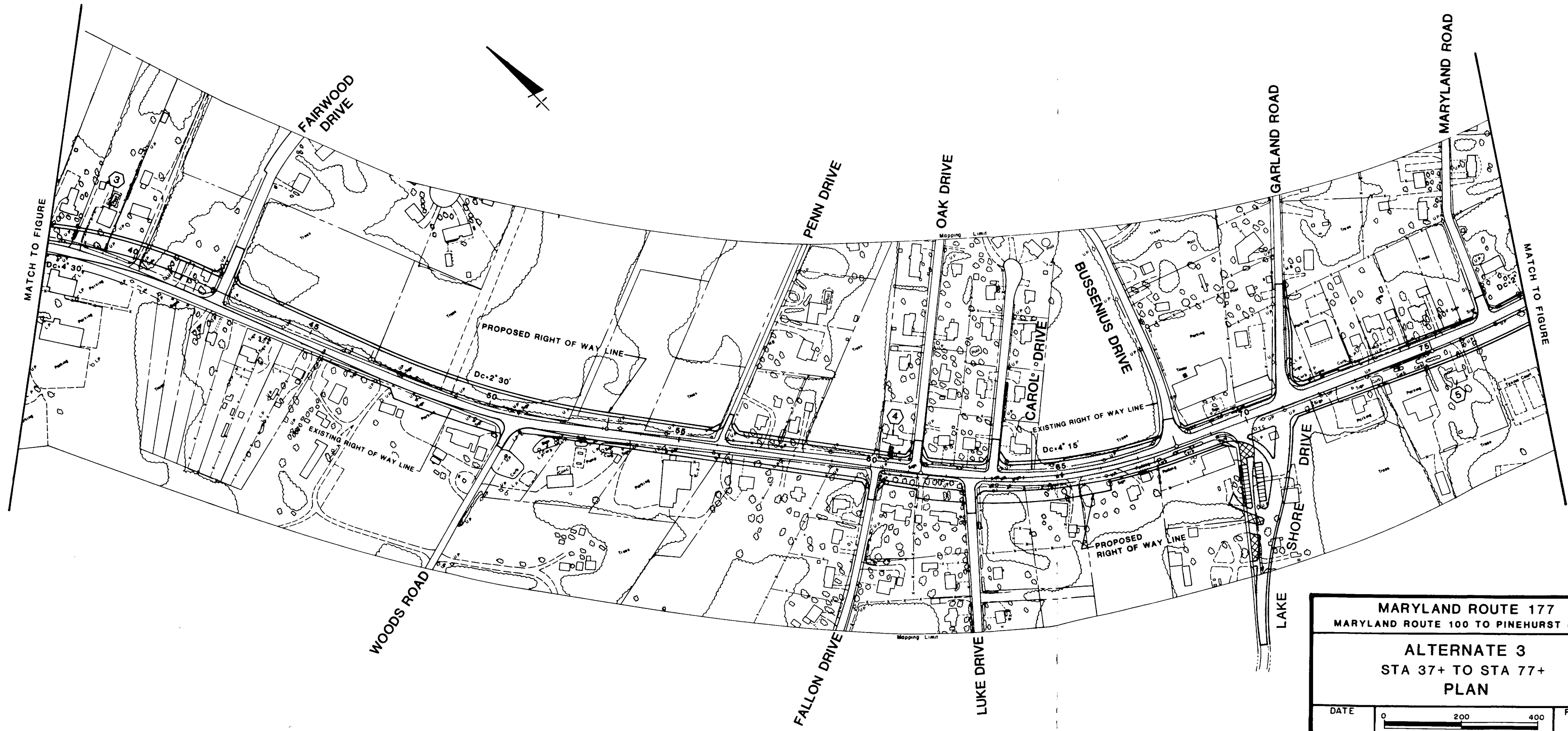


NOTE: ORIGINAL ALIGNMENT NEAR FRESH POND/ANGEL BOG
WOULD IMPACT WETLAND AND FLOODPLAIN

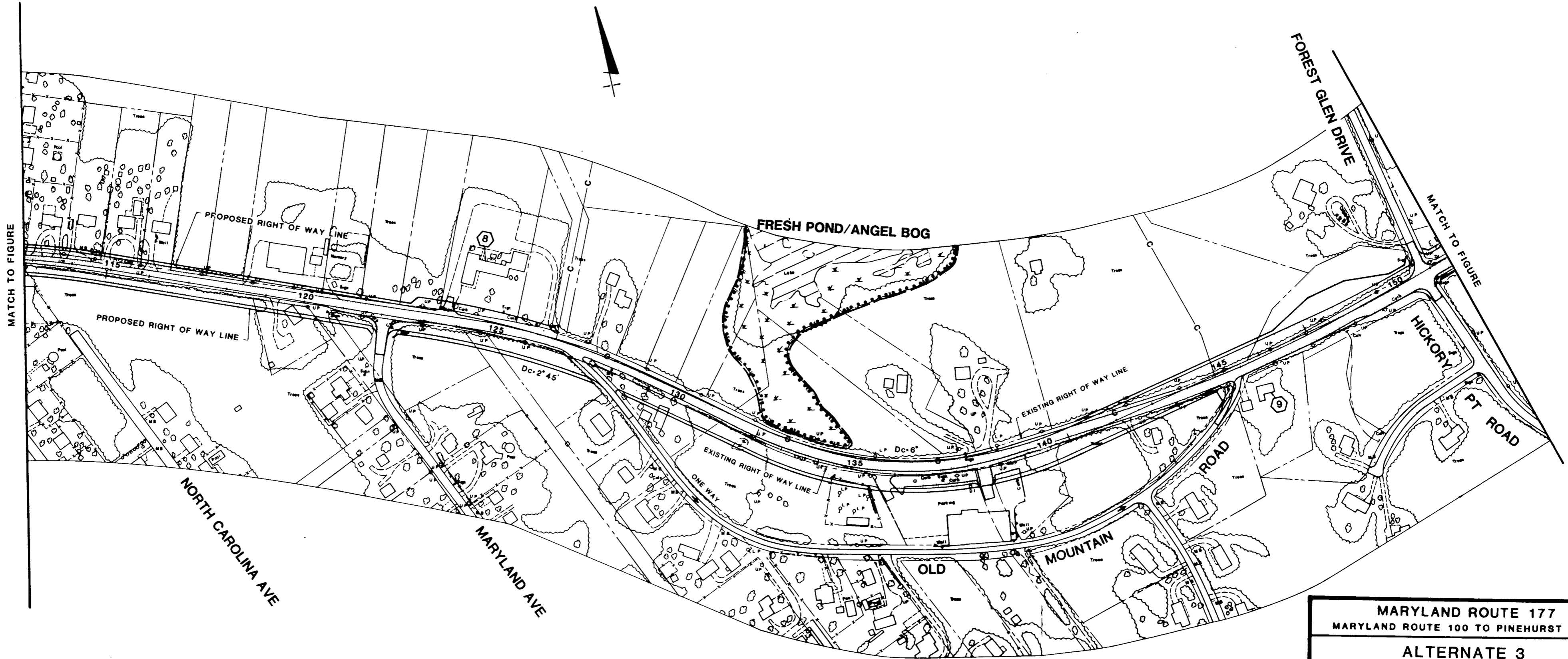
MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 3		
STA 125 + 00 TO STA 158 + 85		
DATE	0 200 400	FIGURE
	SCALE IN FEET	24



MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 3		
LIMIT OF WORK TO STA 37+		
PLAN		
DATE	0 200 400	FIGURE
	SCALE IN FEET	25



MARYLAND ROUTE 177 MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 3 STA 37+ TO STA 77+ PLAN		
DATE	 SCALE IN FEET	FIGURE 26

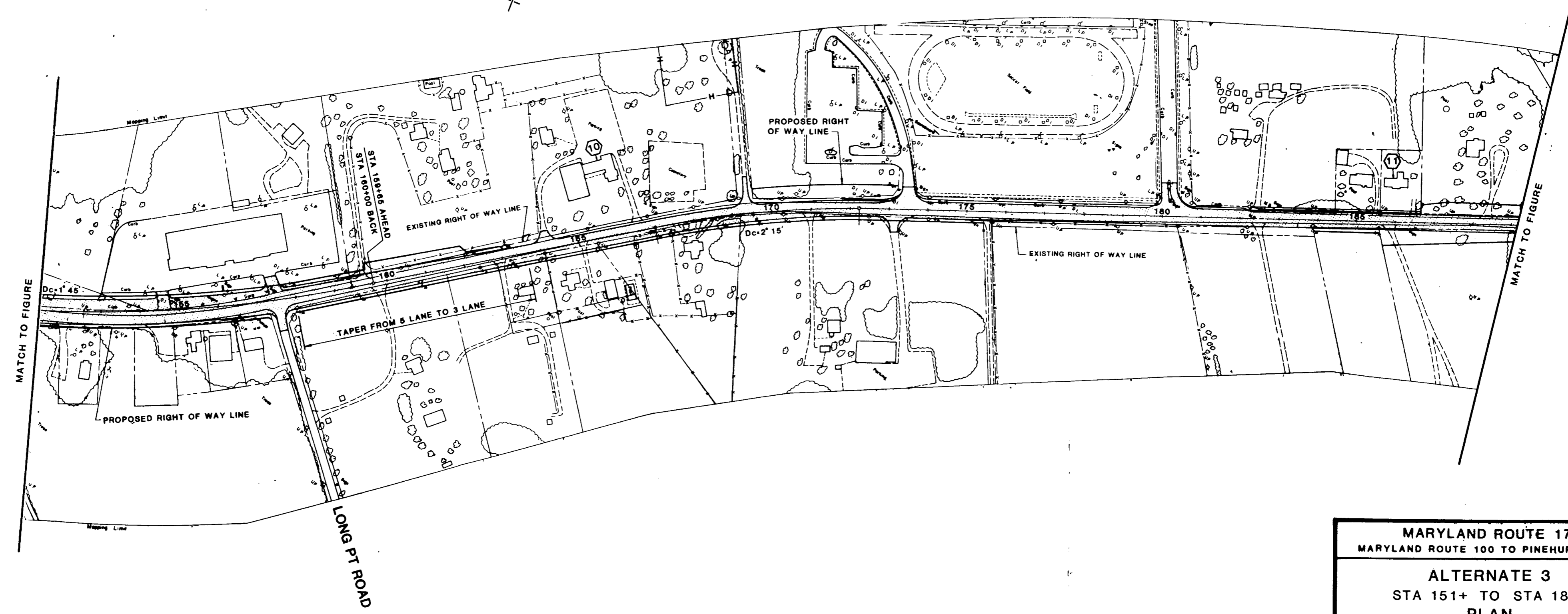


NOTE : INCLUDES ALIGNMENT SHIFT TO AVOID WETLAND AND FLOODPLAIN IMPACTS

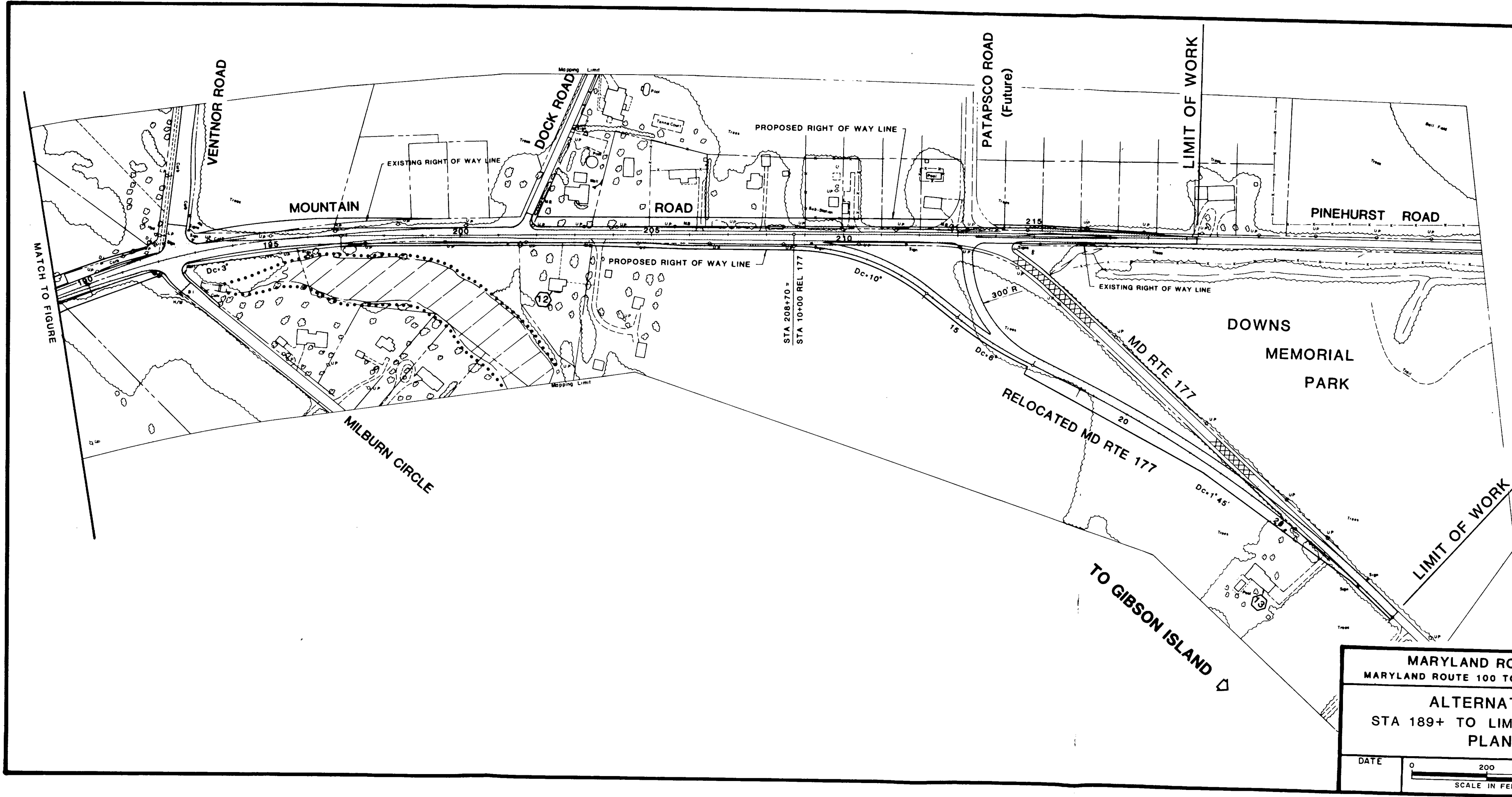
MARYLAND ROUTE 177
 MARYLAND ROUTE 100 TO PINEHURST ROAD
 ALTERNATE 3
 STA 112+ TO STA 151+
 PLAN

DATE	0 200 400	FIGURE
	SCALE IN FEET	28

CHESAPEAKE SENIOR HIGH



MARYLAND ROUTE 177		
MARYLAND ROUTE 100 TO PINEHURST ROAD		
ALTERNATE 3		
STA 151+ TO STA 189+		
PLAN		
DATE	 SCALE IN FEET	FIGURE
		29



MARYLAND ROUTE 177
 MARYLAND ROUTE 100 TO PINEHURST ROAD
 ALTERNATE 3
 STA 189+ TO LIMIT OF WORK
 PLAN

DATE _____ SCALE IN FEET 0 200 400 FIGURE 30

IV. ENVIRONMENTAL IMPACTS

IV. ENVIRONMENTAL IMPACTS

A. Social

1. Relocations

Alternate 2 would displace four residences, one of which is tenant occupied. Alternates 2A and 3 would require the acquisition of these same residences, plus one additional house. Two of these five residences are tenant occupied. A modification to each of these alternates to avoid the Fresh Pond wetland would result in the acquisition of one additional residence. This dwelling is occupied by its owner and a tenant. Income levels of those displaced appear to be in the low to middle range.

Alternate 2 would displace two businesses in the Lake Shore Drive area. In addition, Alternates 2A and 3 would displace three businesses, two of which are also affected under Alternate 2. Two of these businesses appear to be tenant occupied; the other is a small vacant office building which was recently renovated. Depending on the alternate selected, between 7 and 10 employees would be affected.

No elderly or handicapped individuals would be affected by the proposed Build Alternates. Several minority group members are employed by two of the displaced businesses.

All families and businesses would be relocated in accordance with the requirements of the "Uniform Relocation Assistance and Land Acquisition Policies Act of 1970." A summary of the State's relocation assistance program is located in the Appendix. All the required relocations are expected to be accomplished without any undue hardship to those affected. All relocations would be completed in a 12-18 month period and in a timely, orderly, and humane manner. The tenant occupied residential properties would

76

require Housing of Last Resort to provide decent, safe, and sanitary replacement housing.

A survey of the local real estate market reveals there to be sufficient and suitable replacement housing in the Mountain Road area for those affected. However, replacement business sites are limited in the area. A greater number of replacement sites are available closer to and along Ritchie Highway (Maryland Route 2). No other Federal, State, or local projects are foreseen which would affect the supply and availability of area replacement housing.

In addition to the relocations, strip right-of-way would be required from properties adjacent with Maryland Route 177 to accommodate the proposed widening. The Build Alternates would affect approximately 215 properties (including acquisition, and slope easement) with the wetland avoidance alignments affecting 7 fewer properties but requiring larger acquisitions from 5 properties. Alternate 3 would require the greatest amount of property due to its additional right-of-way requirements. Only the No-Build Alternate does not require any property acquisition.

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 economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the Equal Opportunity Section of the Maryland State Highway Administration for investigation.

2. Access to Services and Facilities

Under the No-Build condition, traffic conditions and safety along this section of Maryland Route 177 would continue to worsen as traffic volumes and congestion increases. Besides the rush hour periods, the seasonal fluctuations of traffic are significant. Traffic increases during the warmer months because of water oriented recreation areas. This deterioration resulting from increased traffic would be especially evident along that part of Maryland Route 177 east of Maryland Avenue. Census figures indicate significant growth in this area in the past ten years and land use plans project further residential growth into undeveloped areas.

Safety and service deficiencies combined with increased congestion would result in adverse impacts to local access along and across Maryland Route 177, travel time, non-vehicular traffic, and emergency vehicle response time. Maryland Route 177 provides the sole highway access to the peninsula. In the event of an emergency during peak traffic periods, heavy volumes could hinder access (especially fire and police) to and from this area.

All the build alternates would improve access and reduce congestion allowing better traffic movement throughout the peninsula. Side streets and adjacent development would be more readily accessible. The potential for blockages and accidents would decrease. These improvements to access and travel would be more readily apparent with Alternates 2A and 3 because of the provision of separate turning lanes. Emergency vehicle response time would be reduced as a result of increased capacity and accessibility.

The proposed reconstruction of the Y-split intersections at

H

Maryland Routes 100/177 and Maryland Route 177/Pinehurst Road and the Maryland Route 177/Schmidts Lane and Maryland Route 177/Lake Shore Drive intersections would improve service and safety.

Access would be maintained to all properties even though widening would necessitate driveway and side street intersection reconstruction. The widening would reduce the potential for side friction with pedestrians and other non-vehicular traffic.

School children account for the bulk of pedestrian traffic along Maryland Route 177 because there are four schools in the area.

The proposed action also would improve access to Downs Memorial Park and coastal recreation areas along the peninsula, especially on weekends and holidays.

Patterns of social interaction and community cohesion would not be affected by any of the Build Alternates.

B. Economic and Land Use

Alternate 2 would require the acquisition of two businesses, whereas Alternates 2A and 3 would displace three businesses.

The proposed widening (whether four or five lanes) would not result in any adverse impacts to businesses access. Due to their proximity to the relocated intersection a group of small stores at the corner of Lake Shore Drive and Maryland Route 177 would have their Maryland Route 177 entrance and parking relocated around the corner to Lake Shore Drive. In general, the planned widening would improve access and travel to area businesses by improving congestion and ease of movement.

Under the No-Build condition, local businesses may experience a loss of business due to traffic congestion. Potential customers may be discouraged from frequenting these

79

businesses if they must contend with congestion, delays, and unsafe travel and turning conditions.

Under the Build Alternates, widening would result in the reconstruction of businesses entrances and some reduction in the amount of available parking for each business. Parking would be maintained at each business and on slope easement areas. Alternate 3 would require the acquisition of more parking area. A modification to the Build Alternates in the Fresh Pond area would encroach upon the parking lot of Angel's Market. In some instances, parking space is available on the side lots of businesses.

The proposed project is consistent with the Anne Arundel County General Development Plan (1978) which indicates that future improvements to Maryland Route 177 would better accommodate existing and proposed development in the area. However, the plan has established goals and policies for the preservation of environmentally sensitive wetland areas, such as Fresh Pond/Angel Bog. The plan also indicates that vacant land in the study area would be developed to rural residential density levels only (2 acres or more per unit). No significant change in the existing character of the study area is anticipated. This project would not spur growth incompatible with that now planned.

C. Historic and Archeological Resources Impacts

No historic or archeological sites on or eligible for the National Register of Historic Places exist in the project area, therefore no impacts are anticipated. Concurrence with this assessment has been requested from the Maryland Historical Trust.

D. Natural Environmental Impacts

1. Prime Farmland Soils

All proposed Build Alternates would affect approximately 8.5 acres of Prime Farmland Soils. These soils are located near the Maryland Route 100 intersection with Maryland Route 177, and in an area between Long Point Road and Pinehurst Drive. No working farms identified in the study area would be adversely affected. According to land use plans none of the Prime Farmland Soils affected are planned for agricultural use.

There is no indication that any unique farmland soils are present within the study area.

This project is being coordinated with the Soil Conservation Service in accordance with the National Farmland Protection Policy Act.

2. Floodplains (see alternates mapping)

Limits of the 100 year floodplain for surface waters within the study area are based on Federal Emergency Management Agency (FEMA) floodplain mapping for the area. Encroachment on the 100 year floodplain would be required at one location for build alternates 2, 2A and 3. The floodplain is associated with the Fresh Pond impoundment in the vicinity of Old Mountain Road. A comparison of the amounts of fill required for the alternates considered is shown below:

Floodplain Encroachment Required

- Alternate 1 - 0
(No-Build)
- Alternate 2 - .6 acre
- Alternate 2A - .7 acre
- Alternate 3 - 1.1 acre
- Avoidance Alignments - 0

81

Placement of any fill material within 100 year floodplain will require a section 404 permit from the Army Corps of Engineers.

In accordance with the requirements of FHPM 6-7-3-2, all encroachments are evaluated to determine their significance. 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

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 to the beneficial floodplain values or provide direct or indirect support to further development within the floodplain. No significant floodplain impacts are expected to occur as a result of any proposed Build Alternate. A floodplain finding, if required, will be presented in the final environmental document.

3. Surface Water

No major stream crossings would be required for construction of any of the proposed Build Alternates. Pipe and culvert extensions would be required at several locations to provide adequate roadway drainage.

42

The increase of impervious surfaces resulting from the proposed improvements would produce a proportionate increase in the amount of roadway runoff. Stormwater runoff would be managed under the Department of Natural Resources' Stormwater Management Regulations. 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
- stormwater detention structures

It has been demonstrated that these measures can significantly reduce pollutant loads and control runoff.

Final design for the proposed improvements will include plans for grading, erosion and sediment control, and stormwater management, in accordance with State and Federal laws and regulations. They will require review and approval by the Maryland Department of Natural Resources-Water Resources Administration (WRA) and the Department of Health and Mental Hygiene-Office of Environmental Programs (OEP). A waterway construction permit will also be required from the Department of Natural Resources.

This project will be reviewed by Coastal Zone Management of the Department of Natural Resources to ensure consistency with the goals and objectives of that program.

The Fresh Pond impoundment and surrounding wetlands are listed in the Maryland Critical areas study. This site abutts the existing Maryland Route 177 roadway for approximately 2000 feet. Strict application of stormwater management and sediment and erosion control measures will be required in order to

minimize impacts to this unique area and to Cooks Pond.

4. Habitat

Both terrestrial and aquatic habitats would be affected by the proposed action. A comparison of the amounts of woodland and wetland habitats required for right-of-way, is shown below:

	<u>Habitat Required</u>	
	Wooded	Wetland (Non-Tidal)
Alternate 2	11.5 acres	.1 acre
Alternate 2A	12.6 acres	.1 acre
Alternate 3	13.6 acres	.2 acre
Alternate 3 (Avoidance)	12.8 acres	0

a. Terrestrial

Species such as deer, rabbit, squirrel, racoon, dove, waterfowl, reptiles, amphibians, and fish are representatives of the wildlife populations in the study area. Coordination with DNR, Wildlife Administration, and U.S. Fish and Wilflife Service indicates that there are no known populations of threatened or endangered plant or animal species in the study area. See correspondence from these agencies in Section V.

The loss of habitat is generally accompanied by a proportional loss in animal populations inhabiting the study area. Existing land use in the study area is predominantly residential and commercial. Much of the wooded habitat required abutts existing Maryland Route 177. No significant loss of habitat is anticipated.

b. Aquatic

Pursuant to Executive Order 11990, Protection of Wetlands, wetland areas potentially affected were identified. No tidal

44

wetland areas are located within the study area.

Non-tidal wetlands are identified within the study area based on the U.S. Fish and Wildlife Service National Wetlands Inventory (see Figures 10 - 30). Less than one half acre of non-tidal wetland would be required for Alternates 2, 2A and 3. This wetland, known as Angel's Bog is associated with the Fresh Pond impoundment and is listed in the Maryland Critical Areas study. Fresh Pond lies within the Magothy Peninsula of Anne Arundel County, located on the north side of Mountain Road (Maryland Route 177), west of Forest Glen Drive. It's wetlands extend up to the existing Maryland Route 177 roadway.

This unique area consists of a twelve acre pond and a twenty-three acre shrub swamp and bog, surrounded by forest and farm land. The pond is open water with vegetation along the edges including fragrant water lily, swamp loose-strife, and bladderwort. The shrub swamp and cranberry bog surround the pond, and contain leatherleaf pepperbush, red maple, bull rush, sedge, cranberry, sphagnum, and swamp loose-strife. Most notable of the plant life are the sundew and round leaf sundew, and the pitcher plant, which are insectivorous plants. Unique plants include pipewart and yellow-eyed grass. The unusual mix of plant life found here is attributable to the site's location within a natural transition zone for a number of plant species more common to areas and climates further to the north and south.

Aside from the unique vegetation found here, the significance of Angel's Bog is derived from its function within the ecosystem as a whole. Wetlands perform a variety of functions such as flood storage, groundwater recharge, nutrient retention, food chain support for fish and wildlife habitats and provides a natural sediment trap controlling shoreline erosion for, in case, Main Creek. Increasing development directly adjacent to Fresh Pond and consequent problems associated with development (e.g., increased runoff, sedimentation, stripping of the natural vegetative cover) underscores the value of Angel's Bog. The Bodkin Point Subdivision is immediately west of, and drains onto, the site. In addition, runoff from farming operations adjacent to this area constitute a potential threat if not properly managed.

Farming operations on the northeast shore of Fresh Pond constitute a threat to the water quality and bog vegetation due to the water quality and siltation from pigs eroding the earth along the shoreline and depositing fecal material in the pond.

The Department of State Planning strongly recommends avoiding impacts to all designated Areas of Critical State Concern.

A Waterway Construction Permit from the Department of Natural Resources and a Section 404 Permit from the U.S. Army Corps of Engineers will be required for placement of any fill within the wetland area.

de

Avoidance alignments of the Build Alternates have been developed in order to minimize adverse effects to the Fresh Pond/Angel's Bog wetlands. Further refinements in the design phase will determine the feasibility of these avoidance alignments.

E. Air Quality Impacts

1. Analysis Objectives, Methodology and Results

The objective of the air quality analysis is to compare the carbon monoxide (CO) concentrations estimated to result from traffic configurations and volumes of each alternate with the State and National Ambient Air Quality Standards (S/NAAQS). The NAAQS and SAAQS are identical for CO: 35 PPM (parts per million) for the maximum 1 hour period and 9 PPM for the maximum consecutive 8 hour period.

A microscale CO pollution diffusion analysis was conducted using the third generation California Line Source Dispersion Model, CALINE 3. This microscale analysis consisted of projections of 1 hour and 8 hour CO concentrations at sensitive receptor sites under worst case meteorological conditions for the No-Build and Build Alternates, for the design year (2015) and the estimated year of completion (1995).

a. Analysis Inputs

A summary of analysis inputs is given below. More detailed information concerning these inputs is contained in the Maryland Route 177 Air Quality Analysis which is available for review at the Maryland State Highway Administration, 707 North Calvert Street, Baltimore, Maryland 21202.

Background CO Concentrations

In order to calculate the total concentration of CO which occurs at a particular receptor site during worst case meteorological conditions, the background CO concentrations are considered in addition to the levels directly attributable to the facility under consideration. The concentrations were derived from the application of rollback methodology to on site monitoring data conducted by the Maryland Air Management Administration. The background concentration resulting from area-wide emissions from both mobile and stationary sources was assumed to be the following:

	CO, PPM	
	1 hour	8 hour
1995	9.1	5.2
2015	8.8	5.0

Traffic Data, Emission Factors, and Speeds

The appropriate traffic data was utilized as supplied by the Bureau of Highway Statistics (January and October, 1985) of the Maryland State Highway Administration.

The composite emission factors used in the analysis were derived from the Environmental Protection Agency (EPA) Mobile Source Emission Factors and were calculated using the EPA MOBILE 3 computer program. An ambient air temperature of 20° F was assumed in calculating the emission factors for the 1 hour and 35° F was used for the 8 hour analysis in order to approximate worst case results for each analysis case. Credit for a vehicle inspection maintenance (I/M) emission control program beginning in 1984 was included in the emission factor calculations.

ff

Average vehicle operating speeds used in calculating emission factors were based on the capacity of each roadway link considered, the applicable speed limit, and external influences on speed through the link from immediately adjacent links. Average operating speeds ranged from 20 mph to 40 mph depending upon the roadways and alternate under consideration.

Meteorological Data

Worst-case meteorological conditions of 1 meter/second for wind speed and atmospheric stability class F were assumed for both the 1 hour and 8 hour calculations. In addition, as stated above a worst-case temperature of 20° F was used for the 1 hour analysis and 35° F for the 8 hour analysis.

The wind directions utilized as part of the analysis were rotated to maximize CO concentrations associated with different wind angles.

b. Sensitive Receptors

Site selection of sensitive receptors were made on the basis of proximity to the roadway, type of adjacent land use, and changes in traffic patterns on the roadway network. Thirteen (13) receptor sites were chosen for this analysis consisting of ten (10) residences and three (3) churches. The receptor site locations were verified during study area visits by the analysis team. The receptor sites are shown on Figures 10 - 30.

<u>Site No.</u>	<u>Description/Location</u>
1	Residence - Mountain Road
2	Residence - Mountain Road
3	Residence - Mountain Road
4	Residence - Oak Drive

<u>Site No.</u>	<u>Description/Location</u>
5	Business/Residence - Mountain Road
6	Residence - Mountain Road
7	Parsonage - Lake Shore Baptist Church
8	Church - Galilee Lutheran Church
9	Residence - Mountain Road
10	Parsonage - Mt. Carmel United Methodist Church
11	Residence - Mountain Road
12	Residence - Mountain Road
13	Residence - Mountain Road

c. 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 Alternates are shown on Table 6. The values shown consist of predicted CO concentration attributable to traffic on various roadway links plus projected background levels. A comparison of the values in Table 6 with the S/NAAQS shows that no violations will occur for the No-Build or Build Alternates in 1995 or 2015 for the 1 hour or 8 hour concentrations of CO. The projected CO concentrations vary between alternates depending on receptor locations as a function of the roadway locations and traffic patterns associated with each alternate.

The Build Alternate concentrations are representative of Alternate 3 (5 lane) which is the worst case alternate from an air quality prospective. The concentrations for Alternates 2 (4 lane) and 2A would be slightly lower than the concentrations shown in the Table for Alternate 3.

90

Generally, the No-Build Alternate results in higher CO concentrations than the Build Alternate. The concentrations remain well below the S/NAAOS in 1995 or 2015.

2. Construction Impacts

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

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

3. Conformity with Regional Air Quality Planning

The project is in an air quality nonattainment area which has transportation control measures in the State Implementation Plan (SIP). This project conforms with the SIP since it originated from a conforming transportation improvement program.

4. Agency Coordination

Copies of the technical Air Quality Analysis are being circulated to the U.S. Environmental Protection Agency and the Maryland Air Management Administration for review.

TABLE 6

CO CONCENTRATIONS * AT EACH RECEPTOR SITE, PPM

Receptor	1995				2015			
	1 HR		8 HR		1 HR		8 HR	
	NO-BUILD	BUILD	NO-BUILD	BUILD	NO-BUILD	BUILD	NO-BUILD	BUILD
1	14.0	10.9	5.9	5.7	16.9	12.5	6.4	5.7
2	13.4	11.3	5.8	5.7	15.7	13.2	6.3	6.0
3	12.7	12.5	5.8	5.9	14.7	15.3	6.2	6.5
4	14.9	12.5	6.1	6.1	18.1	15.4	7.0	6.6
5	12.8	11.5	5.7	5.8	14.7	13.5	6.1	6.1
6	12.2	11.7	5.8	6.0	13.6	13.6	6.3	6.4
7	11.5	10.3	5.5	5.5	12.4	10.7	5.8	5.5
8	10.8	10.3	5.5	5.5	12.2	10.6	5.7	5.4
9	12.0	10.8	5.7	5.6	14.3	11.4	6.0	5.6
10	9.8	9.8	5.3	5.4	10.2	9.8	5.4	5.4
11	10.1	9.9	5.4	5.4	10.8	10.1	5.3	5.3
12	9.5	9.4	5.3	5.3	9.6	9.3	5.2	5.1
13	9.2	9.2	5.2	5.2	9.0	9.0	5.1	5.1

*Including Background Concentrations

The S/NAAQS for CO: 1 HR Maximum = 35 PPM

8 HR Maximum = 9 PPM

IV-17

91

92

F. Noise Levels and Noise Impacts

1. Prediction and Analysis Methodology

The method used to predict the future noise levels in the Maryland Route 177 study area was developed by the Federal Highway Administration of the U.S. Department of Transportation. The FHWA Highway Traffic Noise Prediction Model (FHWA Model) incorporates data pertaining to normal traffic volume increases over time, utilizes an experimentally and statistically determined reference sound level for three (3) classes of vehicles (auto, 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, average vehicle speed, and specifies a time period of consideration;
- 2) distance adjustment comparing a reference distance and actual distance between receiver and roadway, including roadway width and number of traffic lanes; and
- 3) adjustment for various types of physical barriers that would reduce noise transmission from source (roadway) to receiver.

Prediction calculations were performed utilizing a computer program adaptation of the FHWA MODEL, STAMINA 2.0 OPTIMA. Since Alternate 3 represents the worst case noise impact, and all Build Alternates follow essentially the same (existing) alignment prediction calculations were performed on Alternate 3 and the No-Build Alternate.

The determination of environmental noise impacts is based on the relationship between the predicted noise levels, the established noise abatement criteria, and the ambient noise

levels in the project area. The applicable standard is the Federal Highway Administration's noise abatement criteria and land use relationships (see Table 5) published in FHPM 7-7-3.

When design year Leq noise levels are projected to exceed the abatement criteria (Table 5) or increases ambient conditions by more than 10 dBA, noise abatement measures (in general, noise barriers) are considered to minimize impacts. Consideration is based on the size of the impacted area (number of structures, spacial distribution of structures, etc.), the predominant activities carried on within the area, the visual impact of control measure, practicality of construction, and economic feasibility.

Economic assessment is based on the following assumptions. An effective barrier should in general, extend in both directions to four (4) times the distance between receiver and roadway (source). In addition, an effective barrier should provide a 7-10 dBA reduction in the noise level, as a preliminary design goal. For the purpose of comparison, a total cost of \$23 per square foot is assumed to estimate total barrier cost.

This cost figure is based on current costs experienced by the Maryland State Highway Administration and includes the costs of panels, footings, drainage, landscaping, and overhead. In addition, the upset limit for determining barrier reasonableness is \$40,000 per residence. This is an average cost figure based on current and projected barrier costs by the Maryland State Highway Administration.

94

2. Prediction Results

All thirteen (13) noise sensitive areas (NSA's) are associated with the No-Build Alternate and each Build Alternate. The predicted Leq noise levels for Alternate 3 increase 2 to 24 dBA over present noise levels and vary from 0 to +6 dBA from the Leq noise levels predicted for the No-Build Alternate (see Table 7).

TABLE 7
Projected Noise Levels
Maryland Route 177

NSA	Description	Ambient Leq	Design Year No Build	2015 Leq 5-lanes
1	Residential	63	67	69
2	Residential	62	66	68
3	Residential	66	64	68
4	Residential	65	67	69
5	Residential	63	65	69
6	Residential	65	66	69
7	Church	61	64	66
8	Church	60	62	64
9	Residential	62	64	64
10	Church	52	61	63
11	Residential	52	66	68
12	Residential	46	60	66
13	Residential	42	63	66

No-Build

Under the No-Build Alternate, none of the NSA's will exceed FHWA criteria. There are three (3) NSA's, however, that will experience a 10 dBA increase or more over ambient (NSA 11, 12 and 13).

Build

Under the Build Alternate, there are seven (7) NSA's that will exceed FHWA noise abatement criteria (NSA 1, 2, 3, 4, 5, 6, and 11). There are four NSA's that will experience a 10 dbA increase or more over ambient or existing noise levels (NSA 10, 11, 12, and 13).

Mitigation

Based on the criteria discussed in the previous section, noise abatement should be considered for NSA'S 1-6 and 10-13 for all Build Alternates.

The alignment of the Build Alternate was designed to avoid the taking of homes and businesses. Any shift of the alignment away from noise sensitive areas would, more than likely, result in residential or commercial relocation. For this reason, alignment shifts to minimize noise impacts are not considered feasible.

Noise abatement measures were considered for the 10 sites affected by this project. At each of these sites, however, private drives, commercial entrances and cross streets would introduce gaps and segmentation to the barrier system. These gaps would limit the potential noise reductions significantly (to 1 to 2 dbA). For these reasons, noise barriers are not feasible for this project.

Three of the sites (NSA 7, 8, and 10) are churches and one of them (NSA 10) is not air conditioned. The walls of the air conditioned churches will provide 20 - 30 dbA of attenuation of road noise while those of the church without air conditioning will provide 10 - 15 dbA of attenuation (windows assumed opened).

qk

None of the churches will exceed interior noise abatement criteria, therefore noise insulation is not recommended.

Some partial mitigation through the use of landscaping and plantings may be feasible for these sites and will be studied in further detail during the design phase of the project.

3. Construction Impacts

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
- Dump and Other Diesel Trucks
- Compressors

Generally, construction activity would occur during normal working hours on weekdays. Therefore, a noise intrusion from construction activities probable 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.

V. COMMENTS AND COORDINATION

94

V. COMMENTS AND COORDINATION

Three (3) Build Alternates were developed and presented at the January 14, 1986 Alternates Public Meeting. Approximately 173 people attended the meeting. The majority of the comments at this meeting supported the need for this project. Strong support was evident for the development of a three lane alternate with a reversible center lane.

This project was discussed at the Quarterly Inter-Agency Project Review Meeting held February 26, 1986.

Coordination has been undertaken with appropriate resource agencies including the Maryland Department of Natural Resources, the U.S. Fish and Wildlife Service and the Maryland Historical Trust.

Continuing efforts will be made to coordinate the proposed project with the appropriate review agencies.



99

TORREY C. BROWN, M.D.
SECRETARY
JOHN R. GRIFFIN
DEPUTY SECRETARY

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
CAPITAL PROGRAMS ADMINISTRATION
TAWES STATE OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

FRED L. ESKEW
ASSISTANT SECRETARY
FOR CAPITAL PROGRAMS

August 2, 1985

Mr. Louis H. Ege
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21203

Subject: Maryland Route 177 from Maryland Route 100 to Pinehurst Road

Dear Mr. Ege:

The Maryland Natural Heritage Program has no record of any rare threatened or endangered species along this portion of Maryland Route 177. However, a notable concentration of rare plants does occur just to the north, at the site identified as "Fresh Pond" on the map included with your submittal of July 22, 1985. Every effort should be made to avoid impact to this pond and the surrounding areas that drain into it. If I can be of additional assistance, please do not hesitate to contact me.

Sincerely,

Arnold W. Norden
Maryland Natural Heritage Program

AWN:mlb

269-3656



100

FORBLY C. BROWN, M.D.
SECRETARY

Department of Natural Resources
MARYLAND FOREST, PARK & WILDLIFE SERVICE
Tawes Office Building
Annapolis, Maryland 21401

DONALD E. MACLAUGHLIN
DIRECTOR

August 13, 1985

Ms. Cynthia D. Simpson
Environmental Management
Department of Transportation
P.O. Box 717
707 North Calvert Street
Baltimore, Maryland 21203-0717

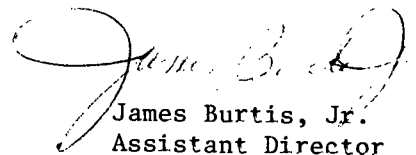
RE: Contract No. AA 396-101-571
PDMS No. 023061 Maryland Rt.
177 from Maryland Rt. 100 to
Pinehurse Road

Dear Ms. Simpson:

Your request for any information we may have concerning threatened or endangered species was reviewed by Gary J. Taylor.

There are no known populations of threatened or endangered species within the area of project influence in Anne Arundel County.

Sincerely,


James Burtis, Jr.
Assistant Director

LS
10

JB:emp

cc: C. Brunori
G. Taylor

LS



United States Department of the Interior

FISH AND WILDLIFE SERVICE
DIVISION OF ECOLOGICAL SERVICES
1825B VIRGINIA STREET
ANNAPOLIS, MARYLAND 21401
August 16, 1985

Ms. Cynthia D. Simpson, Acting Chief
Environmental Management
Maryland Dept. of Transportation
P.O., Box 717
707 N. Calvert St.
Baltimore, MD 21203

Dear Ms. Simpson:

This responds to your recent requests for endangered species information relative to road improvements in Anne Arundel and Montgomery Counties and bridge replacements in Baltimore, Cecil, Charles, Frederick, Harford, Montgomery, Prince Georges and Washington Counties, Maryland.

Except for occasional transient individuals, no Federally listed or proposed endangered or threatened species are known to exist in the project impact areas listed below:

<u>Contract/P.D.M.S. No.</u>	<u>County</u>
P.D.M.S. 153324	Montgomery
A.A. 396-101-571/023061 <i>Md Route 177</i>	Anne Arundel
H. 835-202-480	Harford
P. 815-501-380/163250	Prince Georges
CH 540-201-580/083021	Charles
CE 682- -280/073044	Cecil
CH 551- -571/083024	Charles
M 472-501-371/153268	Montgomery
F 142- -780/103131	Frederick
F 142-201-780/103130	Frederick
H 858- -480/123121	Harford
B 803-101-471/033257	Baltimore
W 818-101-671/213108	Washington

102

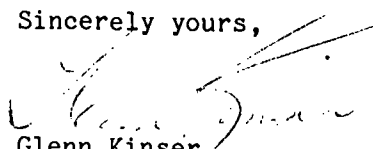
No biological assessment or further Section 7 Consultation is required with the Fish and Wildlife Service (FWS) for these projects. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

Active nests of the endangered bald eagle (Haliaeetus leucocephalus) occur in the vicinity of P.D.M.S. 083025, MD Route 6 bridge replacement over Wards Run, Charles County. In order to ensure that this project does not interfere with the eagles' nesting process, we recommend that construction work be done during the period from July 15 to November 15, preferably from August through October. If you have any questions regarding this recommendation, please contact Judy Jacobs of my endangered species staff, telephone 301/269-6324.

The river harperella (Ptilimnium fluviatile), a candidate plant, may occur in the vicinity of P.D.M.S. 213108, MD Route 68 bridge replacements over Antietam and Beaver Creeks. Candidate species are not legally protected under the Endangered Species Act and biological assessment and consultation requirements pursuant to that legislation do not apply to them. They are included here for the purpose of notifying you of possible future proposals and listings in advance, for consideration in your NEPA review process, and to encourage efforts to avoid adverse impacts to them. Additional information on this candidate species may be obtained by contacting the Maryland National Heritage Program, telephone 301/269-3656.

Thank you for your interest in the conservation of endangered species.

Sincerely yours,



Glenn Kinsler
Supervisor
Annapolis Field Office

103



Maryland Historical Trust

June 26, 1985

Ms. Cynthia D. Simpson
Acting Chief, Environmental Management
State Highway Administration
P. O. Box 717
707 North Calvert Street
Baltimore, Maryland 21203-0717

RE: Maryland Route 177 Widening
Maryland Route 100 to
Pinehurst Road
Anne Arundel County

Dear Ms. Simpson:

Thank you for your letter regarding the above-referenced project.

We concur with your opinion that sites 1, 2, 3, 4, 5, 6 and 8 are not eligible for the National Register. We further concur that the Bodkin School may be National Register-eligible.

Sincerely,

J. Rodney Little
Director
State Historic Preservation
Officer

JRL/KEK/hec

cc: Mr. Anthony F. Christhilf
Ms. Linda Collins
Ms. Rita Suffness

V-6

104



BUREAU OF
PROJECT PLANNING

JAN 22 3 06 PM '86

Maryland Historical Trust

16 January 1986

Mr. Louis H. Ege, Jr., Acting Chief
Bureau of Project Planning
State Highway Administration
Maryland Department of Transportation
P. O. Box 717
707 North Calvert Street
Baltimore, Maryland 21203-0717

Re: AA 396-101-571
MD Rt 177
(MD Rt. 100 to Pinehurst Rd.)
P.S.M.S. No. 023061
Anne Arundel County, Maryland

Dear Mr. Ege:

Thank you for your letter of December 20, 1985, regarding this project. We believe that Bodkin School is not eligible for the National Register, and we agree with SHA that a determination of effect is not needed.

Based upon the results of the Phase I archeological reconnaissance conducted of the project area, we concur that the above-referenced project will have no effect upon significant archeological resources. Therefore, additional archeological investigations are not warranted for this particular project.

Sincerely,

J. Rodney Little
Director/
State Historic Preservation Officer

JRL/GJA/pc

cc: Ms. Rita Suffness
Mr. Tyler Bastian
Mr. Anthony Christhilf
Mr. Michael Parker



105

LAWRENCE C. BROWN, M.D.
SECRETARY

JOHN R. GRIFFIN
DEPUTY SECRETARY

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
MARYLAND GEOLOGICAL SURVEY
THE ROTUNDA
711 W. 40TH STREET, SUITE 440
BALTIMORE, MARYLAND 21211

KENNETH N. WEAVER
DIRECTOR
MARYLAND GEOLOGICAL SURVEY

EMERY T. CLAYTON
DEPUTY DIRECTOR

Division of Archeology
338-7236

9 December 1985

Mr. Louis H. Ege, Jr.
Bureau of Project Planning
State Highway Administration
P.O. Box 717/707 North Calvert St.
Baltimore, Maryland 21203-0717

RE: MD 177 (MD 100 to Pinehurst Dr.)

Dear Mr. Ege:

I recently completed a Phase I archeological investigation of the proposed highway expansion of Maryland Route 177 from the juncture of Maryland Route 100 to Gibson Island. The area surveyed was confined to the limits of the proposed right-of-way as well as the section of the John Downs Memorial Park, which will be impacted by the replacement of Pinehurst Road.

A total of eleven loci were surveyed in the field over the course of several days. Loci were selected on the basis of previous experience with site prediction models. Shovel test pits were placed at approximately 20-meter intervals over most of each loci unless evident disturbances or lack of topographic integrity made testing unnecessary. Soil from the shovel test pits was screened through one quarter inch hardware screen. A total of 78 test pits were dug and screened.

Two transects within the bounds of the Maryland Route 177 project area had been previously examined (with negative results) in 1980 by the Maryland Historical Trust through a contract for the Maryland Department of Transportation to inventory the architectural and archeological resources in the area. These transects were not resurveyed during the work done on this survey.

106

Prior to doing field work, historical background research was done to locate potentially significant archeological sites within the project limits. Search of the historical literature of the area, study of early maps, and discussions with local inhabitants during fieldwork revealed no historically important sites or buildings within the limits of the right-of-way.

The results of the fieldwork were also negative. No prehistoric cultural material was found in the 78 shovel test pits or on the surface. Some historic material was found, but is all of recent origin (post 1940).

No additional archeological field investigations are recommended in connection with this project as defined in the plans provided.

A more detailed report will be forthcoming. In the meantime if you have questions regarding this matter, please feel free to call me.

Sincerely,

Hettie Boyce / HW
Hettie L. Boyce
Archeologist

HLB:lw

cc: Rita Suffness

VI. APPENDICES

108

Attachment for Environmental
Impact Documents
Revised: November 29, 1985
Bureau of Relocation Assistance

"SUMMARY OF THE RELOCATION ASSISTANCE PROGRAM OF THE
STATE HIGHWAY ADMINISTRATION OF MARYLAND"

All State Highway Administration projects must comply with the provisions of the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970" (Public Law 91-646) and/or the Annotated Code of Maryland, Real Property, Title 12, Subtitle 2, Sections 12-201 thru 12-212. The Maryland Department of Transportation, State Highway Administration, Bureau of Relocation Assistance, administers the Relocation Assistance Program in the State of Maryland.

The provisions of the Federal and State Law require the State Highway Administration to provide payments and services to persons displaced by a public project. The payments that are provided include replacement housing payments and/or moving costs. The maximum limits of the replacement housing payments are \$15,000 for owner-occupants and \$4,000 for tenant-occupants. Certain payments may also be made for increased mortgage interest costs and/or incidental expenses, provided that the total of all housing benefits does not exceed the above mentioned limits. In order to receive these payments, the displaced person must occupy decent, safe and sanitary replacement housing. In addition to the replacement housing payments described above, there are also moving cost payments to persons, businesses, farms and non-profit organizations. Actual moving costs for residences include actual moving costs up to 50 miles or a schedule moving cost payment, including a dislocation allowance, up to \$500.

The moving cost payments to businesses are broken down into several categories, which include actual moving expenses and payments "in lieu of" actual moving expenses. The owner of a displaced business is entitled to receive a payment for actual reasonable moving and related expenses in moving his business, or personal property; actual direct losses of tangible personal property; and actual reasonable expenses for searching for a replacement site.

109

The actual reasonable moving expenses may be paid for a move by a commercial mover or for a self-move. Generally, payments for the actual reasonable expenses are limited to a 50 mile radius. The expenses claimed for actual cost commercial moves must be supported by 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, not to exceed the lowest acceptable bid obtained. The allowable expenses of a self-move may include amounts paid for equipment hired, the cost of using the business' own vehicles or equipment, wages paid to persons who physically 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.

In addition to the actual moving expenses mentioned above, the displaced business is entitled to receive a payment for the actual direct losses of tangible personal property that the business is entitled to relocate but elects not to move. These payments may only be made after an effort by the owner to sell the personal property involved. The costs of the sale are also reimbursable moving expenses. If the business is to be reestablished, and the personal property is not moved but is replaced at the new location, the payment would be the lesser of the replacement cost minus the net proceeds of sale (or trade-in value) or the estimated cost of moving the item. If the business is being discontinued or the item is not to be replaced in the reestablished business, the payment will be the lesser of the difference between the value of the item for continued use in place and the net proceeds of the sale or the estimated cost of moving the item. When personal property is abandoned without an effort by the owner to dispose of the property for sale, unless permitted by the State, the owner will not be entitled to moving expenses, or losses for the item involved.

The owner of a displaced business may be reimbursed for the actual reasonable expenses in searching for a replacement business up to \$1,000. All expenses must be supported by receipted bills. Time spent in the actual search may be reimbursed on an hourly basis, within the maximum limit.

In lieu of the payments described above, the business may elect to receive a payment equal to the average annual net earnings of the business. Such payment shall not be less than \$2,500 nor more than \$10,000. In order to be entitled to this payment, the State must determine that the business cannot be relocated without a substantial loss of its existing patronage, the business is not part of a commercial enterprise having at least one other establishment in the same or similar business that is not being acquired, and the business contributes materially to the income of a displaced owner during the two taxable years prior to displacement.

Considerations in the State's determination of loss of existing patronage are the type of business conducted by the displaced business and the nature of the clientele. The relative importance of the present and proposed locations to the displaced business, and the availability of suitable replacement sites are also factors.

In order to determine the amount of the "in lieu of" moving expenses payment, the average annual net earnings of the business is considered 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, his spouse, or his 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, for the tax years in question.

For displaced farms and non-profit organizations, the actual reasonable moving costs generally up to 50 miles, actual direct losses of tangible personal property, and searching costs are paid. The "in lieu of" actual moving cost payments provide that the State may determine that a displaced farm may be paid from a minimum of \$2,500 to a maximum of \$10,000, based upon the net income of the farm, provided that the farm has been discontinued or relocated. 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 "in lieu of" actual moving cost payments, in the amount of \$2,500.

A more detailed explanation of the benefits and payments available to displaced persons, businesses, farms, and non-profit organizations is available in Relocation Brochures that will be distributed at the public hearings for this project and will also be given to displaced persons individually in the future along with required preliminary notice of possible displacement.

In the event comparable replacement housing is not available to rehouse persons displaced by public projects or that 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.

The "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970" requires that the State Highway Administration shall not proceed with any phase of any 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.