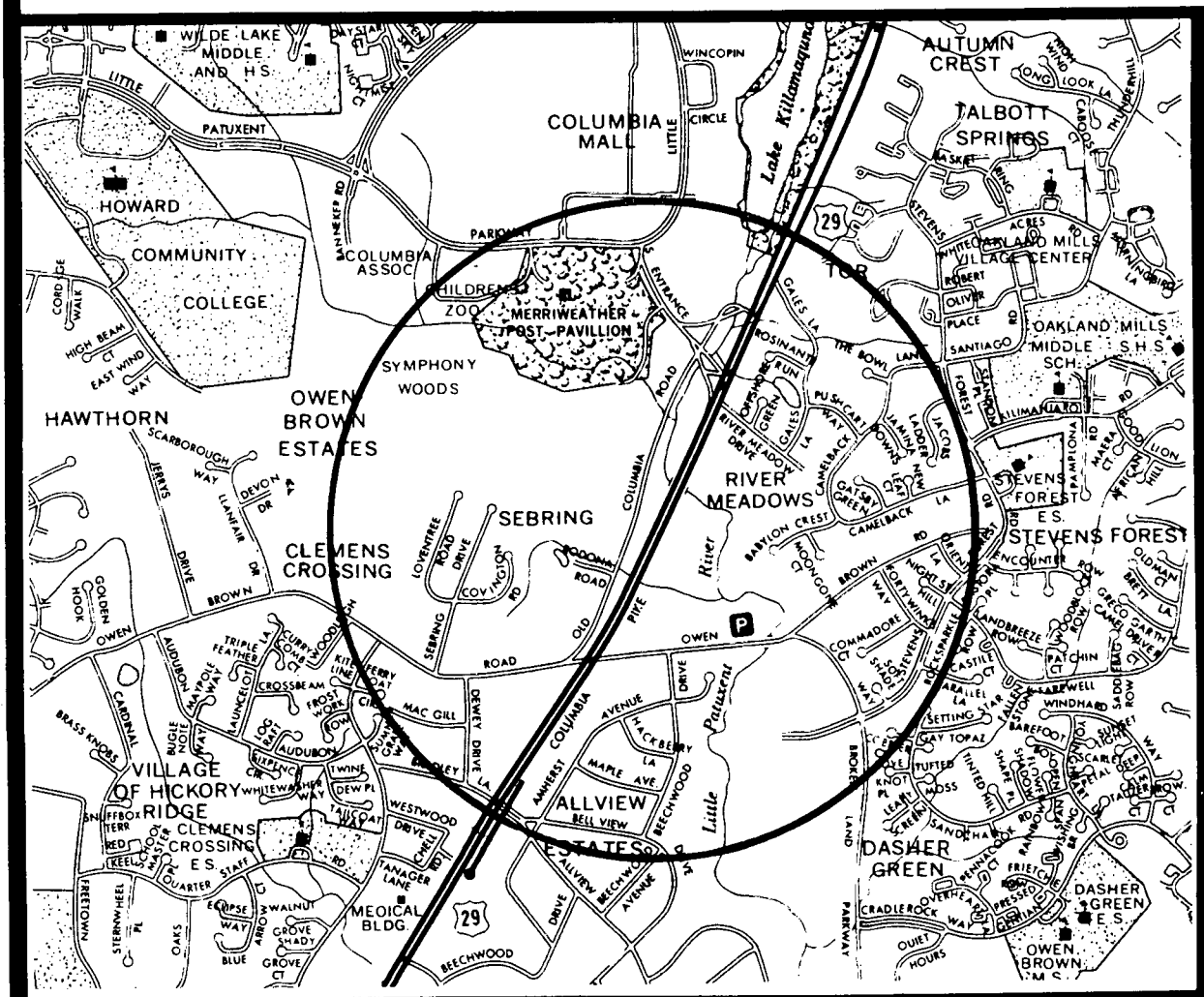
ENVIRONMENTAL ASSESSMENT

FOR

CONTRACT NO. HO 630-101-770

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

HOWARD COUNTY, MARYLAND



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

and
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

2

REPORT NUMBER: FHWA MD-EA-85-09-D

FEDERAL HIGHWAY ADMINISTRATION

REGION III

U.S. Route 29/Broken Land Parkway
Interchange
Howard 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. (s) (C) 23 U.S.C. 128 (a)
CEQ Regulations (40 CFR 1500 seq.)

HAL KASSOFF
STATE HIGHWAY ADMINISTRATOR

12/20/85
DATE

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

1/6/86
DATE

by: for
Federal Highway Administration
Division Administrator

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., Acting
Chief, Bureau of Project
Planning, State Highway
Administration, Room 310
707 North Calvert Street
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The Rotunda - Suite 220
711 West 40th Street
Baltimore, Maryland 21211
Phone: (301) 962-4011
Hours: 7:45 a.m. - 4:15 p.m.

3. Description of Action

This project proposes the construction of an interchange to improve traffic operations at the existing at-grade intersection of U.S. Route 29 with Owen Brown Road. The existing intersection operates at or near capacity. See Figures 1 and 2 for the approximate location of the project area.

4. Alternates Description

The State Highway Administration has considered several preliminary interchange alternates. Four (4) alternates incorporating the most feasible environmental and engineering features of the preliminary alignments were developed for presentation at the Alternates Public Meeting held April 25, 1985 at the Owen Brown Middle School. As a result of public comment, coordination with the communities and elected officials, and the evaluation of environmental and engineering

studies, three build alternates, Alternates 2, 3, and 5, and the No-Build Alternate were recommended for detailed studies (See Figures 23, 26, 27 and 29). A fifth build alternate, Alternate 6, was developed subsequent to the Alternates Meeting and was also recommended for detailed studies.

Alternates 2 and 3 propose the extension of Broken Land Parkway from Stevens Forest Road across U.S. Route 29 to Symphony Woods Road, with a partial cloverleaf interchange between U.S. Route 29 and Broken Land Parkway Extended. Alternate 3 differs from Alternate 2 in that its tighter geometry minimizes right-of-way requirements. Both alternates utilize a directional flyover ramp for the heavy northbound U.S. Route 29 to westbound Broken Land Parkway movement.

Alternates 5 and 6 propose the reconstruction of Owen Brown Road as a five-lane roadway with a partial cloverleaf interchange between U.S. Route 29 and Owen Brown Road at the location of the present intersection. Alternate 6 differs from Alternate 5 in that it includes directional ramps to Broken Land Parkway Extended in the northwest quadrant.

5. Summary of Impacts

Alternates 2 and 3 would displace three residences and one minority owned business. Alternate 5 requires no displacements and Alternate 6 requires four residential displacements. In total, Alternates 2, 3, 5, and 6 would require 56.2, 48.4, 11.2, and 24.1 acres of additional right-of-way, respectively.

The additional right-of-way, would include, respectively for Alternates 2, 3, 5, and 6, 35.1, 28.4, 7.5 and 7.5 acres of woodlands, 1.5, 1.5, .1, and .1 acres of wetlands, 20.3, 13.0, 1.0 and 1.0 acres of 100-year floodplains, and 15.7, 15.7, 14.2 and 14.2 acres of prime

farmland soils. Alternates 2 and 3 would each entail seven stream crossings while Alternates 5 and 6 would each entail six stream crossings. No threatened or endangered plant or animal species would be affected by any alternate.

One historic site on or eligible for the National Register of Historic Places would be affected by all alternates. No property would be required from this site. No archeological sites or public recreational area would be affected by any alternate.

The National Ambient Air Quality Standards will not be exceeded with the construction of any alternate. Federal Design Noise Abatement Criteria would be exceeded at three Noise Sensitive Areas for all alternates.

A comparison of impacts resulting from each alternate can be found in the Summary of Impacts table on the following page.

SUMMARY OF IMPACTS

U.S. 29 ROUTE 29/BROKEN LAND PARKWAY
INTERCHANGE

	No-Build Alt.	Alt. 2	Alt. 3	Alt. 5	Alt. 6
SOCIO-ECONOMIC IMPACTS					
1. Residential Displacements	0	3	3	0	4
2. Number of Families Relocated	0	3	3	0	4
3. Minority Families Relocated	0	0	0	0	0
4. Business Displacements (Minority (owned)	0	1	1	0	0
5. Historic and Archeologic Sites	None	None	None	None	None
6. Public Recreational Lands Affected	None	None	None	None	None
7. Consistent with Land Use Plan	No	Yes	Yes	Yes	Yes
NATURAL ENVIRONMENT IMPACTS					
1. Loss of Natural Habitat	0	35.1	28.4	7.5	7.5
2. Effect on Threatened or Endangered Species	None	None	None	None	None
3. Stream Crossings	0	7	7	6	6
4. Non-tidal Wetlands Affected (Acres)	0	1.5	1.5	.1	.1
5. Floodplain Areas Affected (Acres)	0	20.3	13.0	1.0	1.0
6. Prime Farmland Soils Affected (acres)	0	15.7	15.7	14.2	14.2
7. Stream Relocations (Feet)	0	700	700	0	0

		No-Build Alt.	Alt. 2	Alt. 3	Alt. 5	Alt. 6
8.	Air Quality Sites exceeding S/NAAQS	0	0	0	0	0
9.	Noise Sensitive Areas (NSA's) exceeding Federal Noise Abatement Criteria	3	3	3	3	3
COST - 1985 DOLLARS (x 1,000)						
1.	Construction	0	22,328	18,775	11,074	14,059
2.	Right-of-Way	0	5,200	4,565	744	2,300
3.	Envineering and Overhead	0	5,766	4,872	2,620	3,503
	TOTAL	0	33,294	28,212	14,438	19,862

The following Environmental Assessment Form is a requirement of the Maryland Environmental Policy Act and Maryland Department of Transportation Order 11.01.06.02. It's 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.

ENVIRONMENTAL ASSESSMENT FORM

	YES	NO	COMMENTS
A. Land Use Considerations			
1. Will the action be within the 100 year flood plain?	X		Sec. IV-C-1
2. Will the action require a permit for construction or alteration within the 50 year flood plain?	X		Sec. IV-C-1
3. Will the action require a permit for dredging, filling, draining or alteration of a wetland?	X		Sec. IV-C-1
4. Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?		X	
5. Will the action occur on slopes exceeding 15%?		X	
6. Will the action require a grading plan or a sediment control permit?	X		Sec. IV-C-3
7. Will the action require a mining permit for deep or surface mining?		X	
8. Will the action require a permit for drilling a gas or oil well?		X	
9. Will the action require a permit for airport construction?		X	
10. Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?		X	
11. Will the action affect the use of a public recreation area, park, forest, wildlife management area, scenic river or wildland?		X	

	YES	NO	COMMENTS
12. Will the action affect the use of any natural or man-made features that are unique to the county, state, or nation?	___	X	_____
13. Will the action affect the use of an archeological or historical site or structure?	___	X	Sec. IV-B
B. Water Use Considerations			
14. Will the action require a permit for the change of the course, current, or cross-section of a stream or other body of water?	X	___	Sec. IV-C-3
15. Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	___	X	_____
16. Will the action change the overland flow of storm water or reduce the absorption capacity of the ground?	X	___	Sec. IV-C-3
17. Will the action require a permit for the drilling of a water well?	___	X	_____
18. Will the action require a permit for water appropriation?	___	X	_____
19. Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	___	X	_____
20. Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	___	X	_____

	YES	NO	COMMENTS
21. Will the action result in any discharge into surface or sub-surface water?	X		Sec. IV-C-3
22. If so, will the discharge affect ambient water quality parameters and/or require a discharge permit?		X	Sec. IV-C-3
C. Air Use Considerations			
23. Will the action result in any discharge into the air?	X		Sec. IV-D-1
24. If so, will the discharge affect ambient air quality parameters or produce a disagreeable odor?		X	Sec. IV-D-1
25. Will the action generate additional noise which differs in character or level from present conditions?	X		Sec. IV-E-2
26. Will the action preclude future use of related air space?		X	
27. Will the action generate any radiological, electrical, magnetic, or light influences?		X	
D. Plants and Animals			
28. Will the action cause the disturbance, reduction or loss of any rare, unique or valuable plant or animal?		X	Sec. IV-C-4
29. Will the action result in the significant reduction or loss of any fish or wildlife habitats?		X	
30. Will the action require a permit for the use of pesticides, herbicides or other biological, chemical or radiological control agents?		X	

	YES	NO	COMMENTS
E. Socio-Economic			
31. Will the action result in a pre-emption or division of properties or impair their economic use?	X		Sec. IV-A-1
32. Will the action cause relocation of activities, structures, or result in a change in the population density or distribution?	X		Sec. IV-A-1
33. Will the action alter land values?	X		Sec. IV-A-3
34. Will the action affect traffic flow and volume?	X		Sec. IV-A-2
35. Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?		X	Sec. IV-C-3
36. Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?		X	
37. Is the action in accord with federal, state, regional and local comprehensive or functional plans--including zoning?	X		Sec. IV-A-4
38. Will the action affect the employment opportunities for persons in the area?	X		Sec. IV-A-3
39. Will the action affect the ability of the area to attract new sources of tax revenue?	X		Sec. IV-A-3
40. Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?		X	

	YES	NO	COMMENTS
41. Will the action affect the ability of the area to attract tourism?	___	X	_____
F. Other Considerations			
42. Could the action endanger the public health, safety or welfare?	___	X	_____
43. Could the action be eliminated without deleterious affects to the public health, safety, welfare or the natural environment?	___	X	_____
44. Will the action be of statewide significance?	___	X	_____
45. Are there any other plans or actions (federal, state, county or private) that, in conjunction with the subject action could result in a cumulative or synergistic impact on the public health, safety, welfare, or environment?	X	___	Sec. III-A-2
46. Will the action require additional power generation or transmission capacity?	___	X	_____
47. This agency will develop a complete environmental effects report on the proposed action.	X	___	_____

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I. DESCRIPTION OF PROPOSED ACTION

I. DESCRIPTION OF PROPOSED ACTION

A. Project Location

The existing U.S. Route 29/Owen Brown Road intersection is located in northeastern Howard County, Maryland. U.S. Route 29, the primary roadway in the project area, begins at Interstate 70 and runs in a southerly direction to Washington, D.C., connecting suburban Baltimore and suburban Washington (See Figure 1). Residential and commercial development is rapidly occuring in the U.S. Route 29 corridor.

B. Project Description

The proposed project would improve traffic congestion at the U.S. Route 29/Owen Brown Road intersection through the construction of an interchange between U.S. Route 29 and either Owen Brown Road or Broken Land Parkway. U.S. Route 29 is a four lane highway with partial control of access and experiences (peak hour traffic) congestion. Owen Brown Road is a local east-west roadway. Broken Land Parkway is a two lane roadway which currently extends in a north-south direction from Owen Brown Road to Snowden River Parkway.

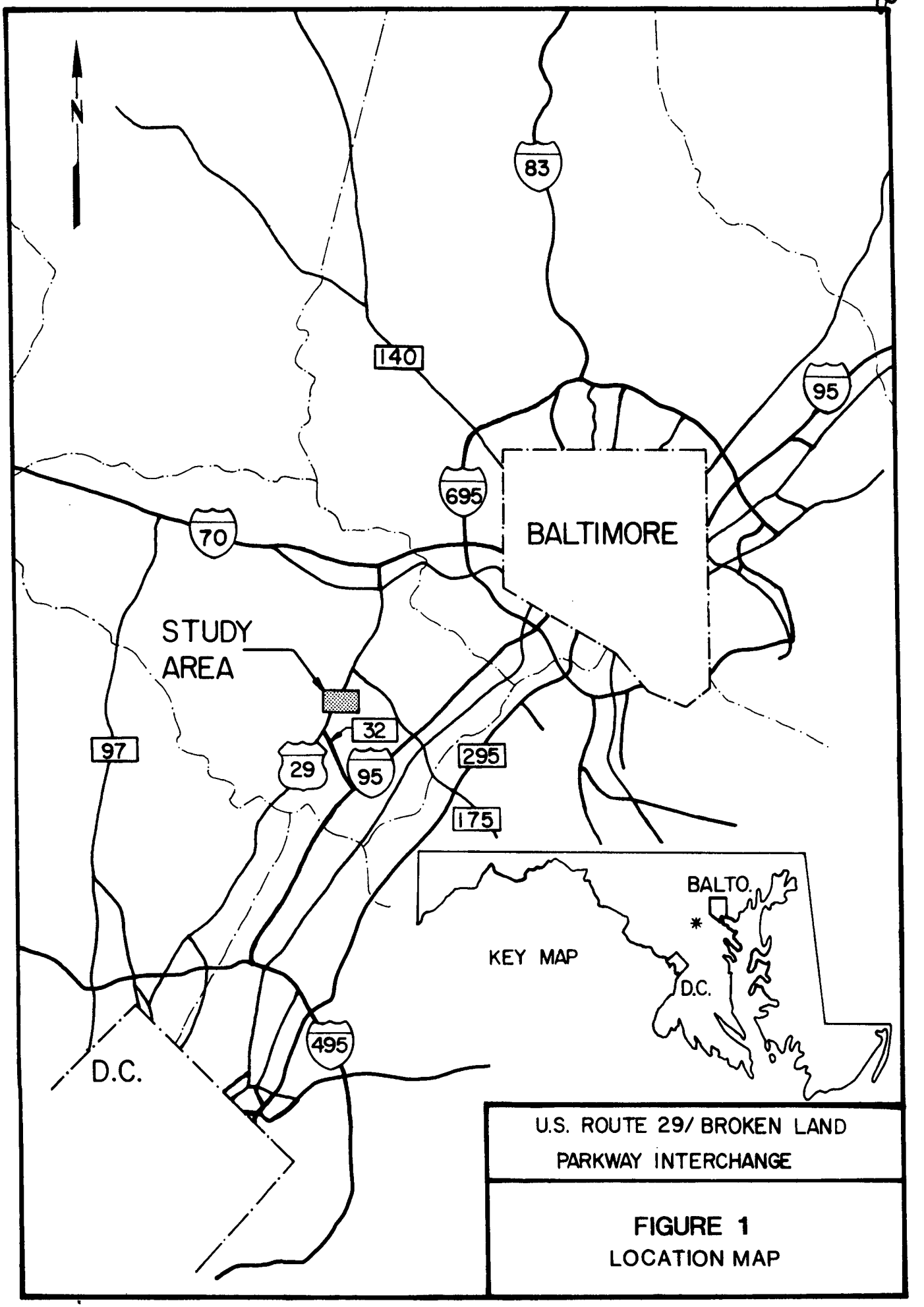
C. Description of Existing Environment

1. Social Environment

a. Population

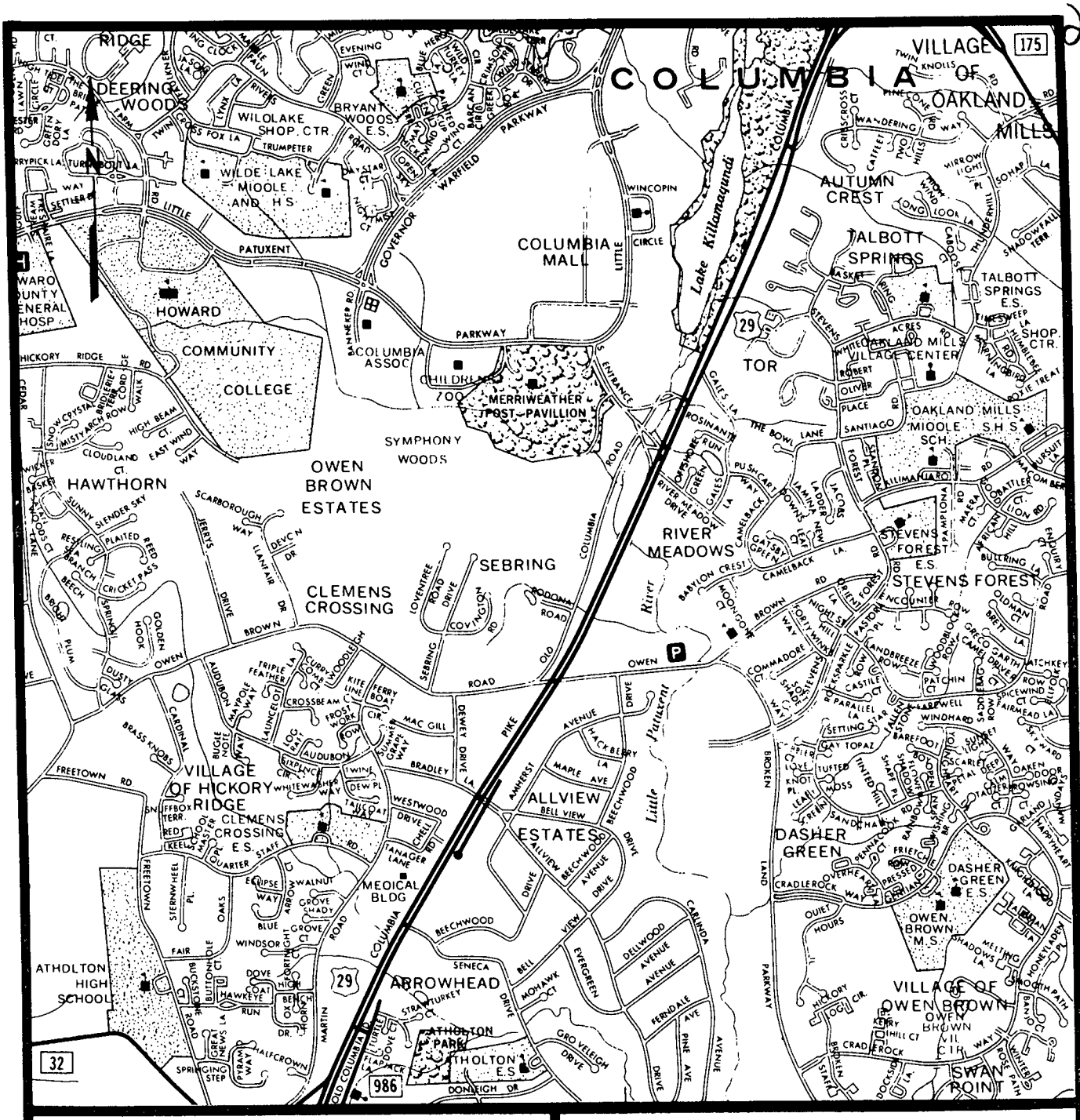
In the last decade, Howard County experienced an acceleration of growth nearly doubling its population. From 1970 to 1980, the population increased by 90%, the largest growth rate among all Maryland Counties. The County's population is projected to double again by the year 2000 (103% by the year 2005).

Much of this growth has occurred in the eastern portion



U.S. ROUTE 29/ BROKEN LAND PARKWAY INTERCHANGE

FIGURE 1
LOCATION MAP



2000′ 0′ 2000′ 4000′

U.S. ROUTE 29/ BROKEN LAND PARKWAY INTERCHANGE

FIGURE 2
STUDY AREA

Maryland Department of Transportation
State Highway Administration

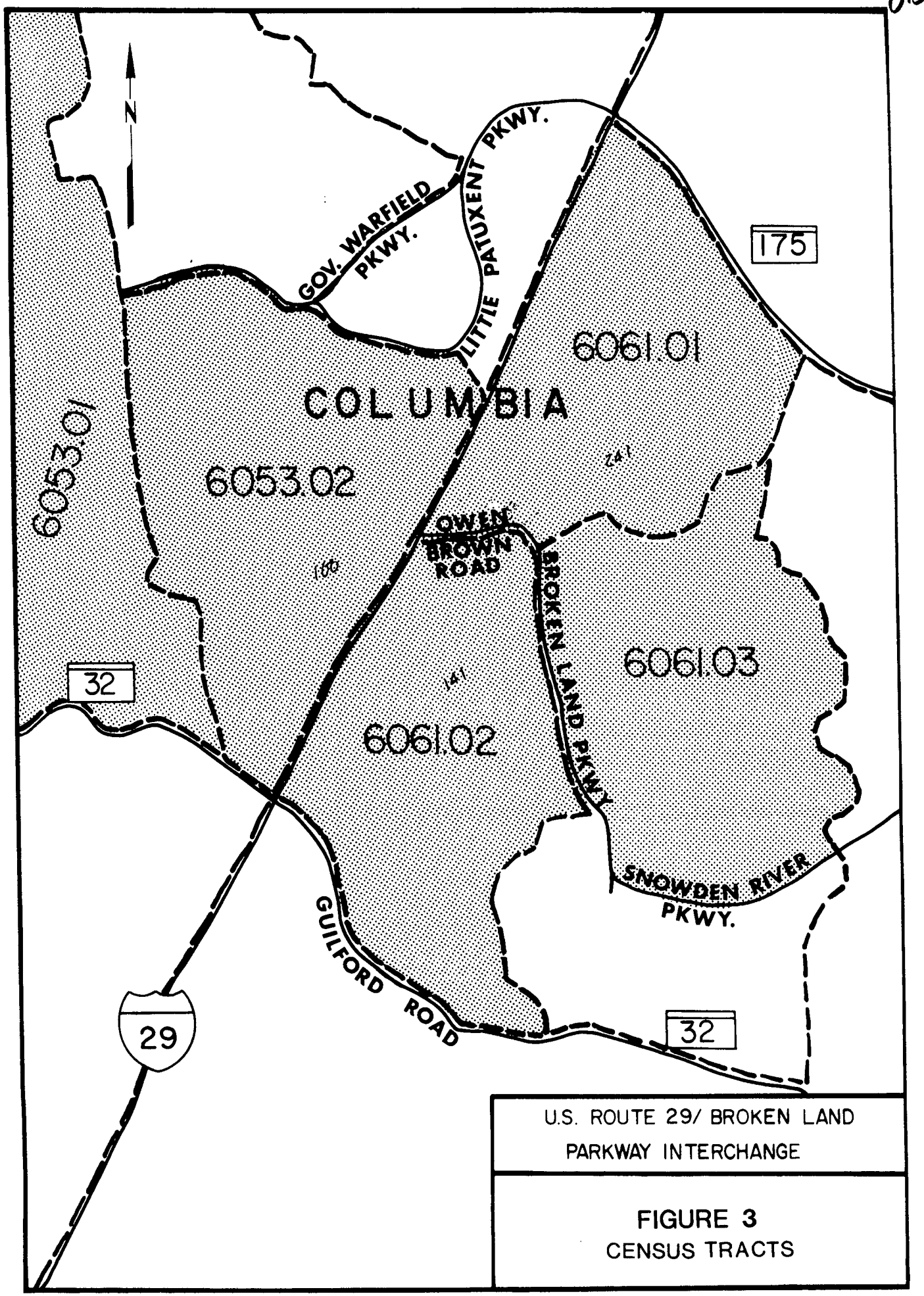
of the County around Columbia and Ellicott City and along U.S. Route 29, U.S. Route 1 and Interstate 95. This growth can be attributed to the county's central location in the expanding Baltimore-Washington corridor, improvements to Interstate Routes 95 and 70, as well as U.S. Routes 1, 40 and 29 which traverse the county.

The growth is also due to the development of Columbia and its environs. According to the Maryland Department of Economic and Community Development, Columbia's population increased over 345% in the last decade (11,788 to 52,500 people) and is projected to increase by 37% (to 72,000 people) by the year 1990.

The study area includes portions of Census Tracts (CT) #6053.02, 6061.01 and 6061.02 (See Figure 3). For purposes of population comparisons the reader should note that the 1980 Census Tract 6053.01 was combined with Census Tract 6053.02 and Census Tract 6061.01 and 6061.02 were combined with Census Tract 6061.03 in 1970. Together, they comprise areas equivalent to the boundaries of Census Tract 6053 and 6061 respectively in 1970. These latter two Census Tracts were subdivided after the 1970 Census.

From 1970 to 1980, the population in Census Tracts 6053.01 and 6053.02 increased by 367% (1535 to 7168). The populatiuon in the Census tracts #6061.01, 6061.02 and 6061.03 increased by an even greater rate 591.2% (2596 to 17943) in the same time period (Table 2).

According to the U.S. Bureau of the Census (1980), Census Tract 6053.01 had a population of 3,976, 6061.01 had a population of 6,899 and 6061.02 had a population of 3,092 for a total of 13,967 people (see Table 2).



U.S. ROUTE 29/ BROKEN LAND PARKWAY INTERCHANGE

FIGURE 3
CENSUS TRACTS

TABLE 2

Population and Growth in the Study Area

	1970	1980	% of Growth Rate
Howard County	62394	118572	90.0
Census Tract total	-	13967	-
6053.02	-	3976	-
6061.01	-	6899	-
6061.02	-	3092	-
6053 *	1535	7168	367.0
6061 *	2596	17943	591.2

*These Census Tracts were subdivided after 1970 Census. Totals reflect figures for Census Tracts 6053.01 and 6053.02, and 6061.01, 6061.02, and 6061.03 in 1980.

An analysis of the 1980 Census data indicates that, of the total population in the aforementioned Census Tracts, 79.6% were white, 16.1% were black, 4.0% were of Asian origin, 0.15 were American Indian and 0.3% were others. Census tract 6061.01 had the highest proportion of minority population (26%). Furthermore, 482 (3.5%) of the population in all three Census Tracts were identifed as being age 60 and older, with the largest percentage residing in CT 6061.02 (4.6%). No concentrations of minorities and elderly were identified in the study area.

TABLE 3

Racial, Ethnic, and Age Composition of the Study Area
Number (% of Total)

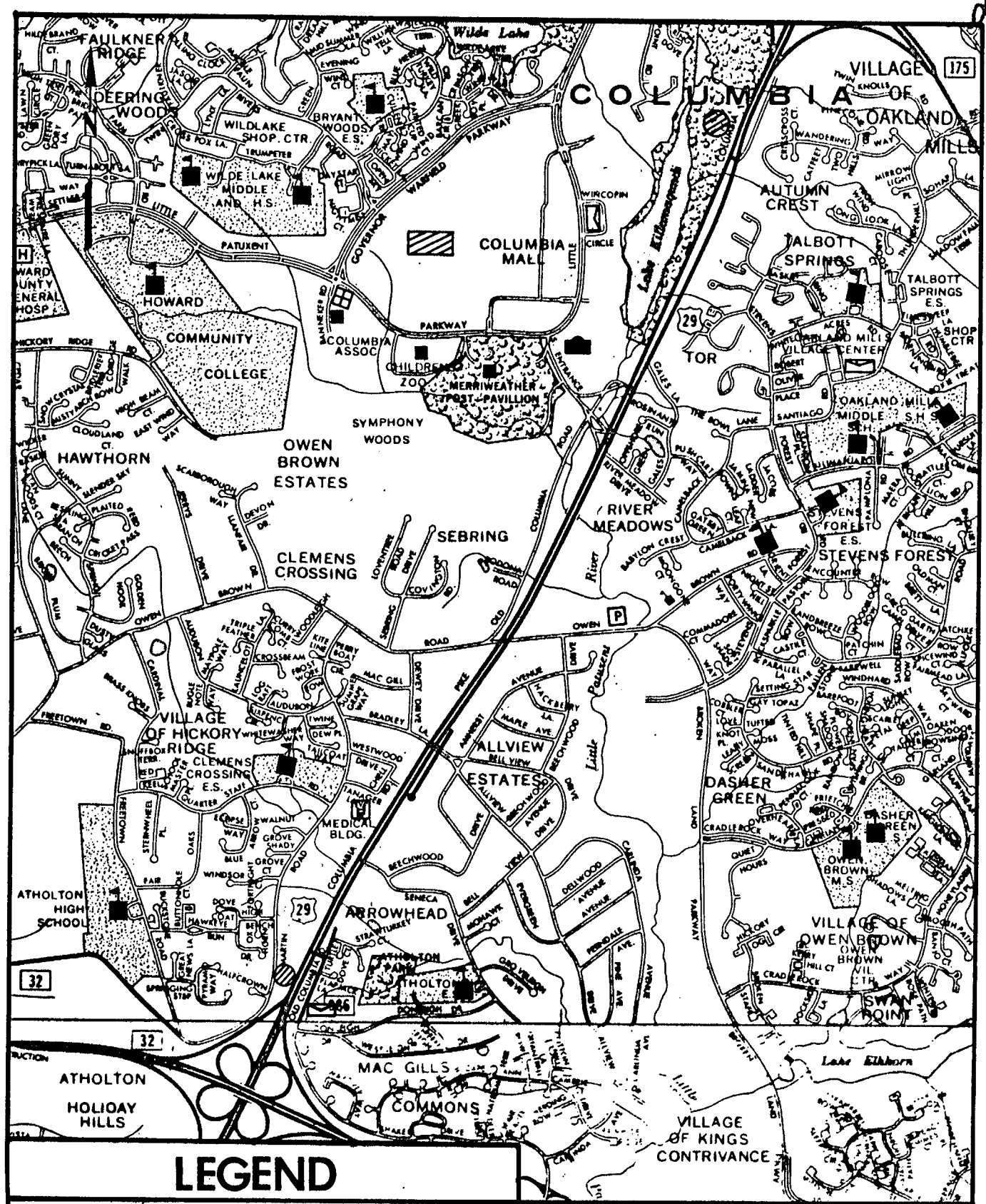
	Census Tracts Total	6053.02	6061.01	6061.02
Total	13,967	3976	6899	3092
White	11,123 (79.6)	3,346 (84.2)	5,091 (73.8)	2,686 (86.9)
Black	2,238 (16.1)	466 (11.7)	1,570 (22.8)	202 (6.5)
Asian Origin	554 (4.0)	158 (4.0)	197 (2.9)	199 (6.0)
American Indian	11 (.08)	6 (0.2)	0	5 (0.2)
Other	41 (.29)	0	41 (0.6)	0
60+	482 (3.5)	100 (2.5)	241 (3.5)	141 (4.6)

b. Community Facilities

The study area is served by a variety of community facilities and services within the surrounding Columbia area.

Situated in or near the study area are the following schools:

Wildlake Middle
Wildlake High
Atholton High
Atholton Elementary
Owen Brown Middle
Dasher Green Elementary
Stevens Forest Elementary
Swansfield Elementary
Talbot Springs Elementary
Cedar Lane Special Education
Oakland Mills High
Oakland Mills Middle
Julia Brown Montessori



LEGEND

- SCHOOL
- RECRE. FACILITY
- MEDICAL
- PARK AND RECRE.
- SHOPPING AREA
- PARK AND RIDE
- POST OFFICE
- FIRE STATION
- LIBRARY

FIGURE 4
COMMUNITY FACILITIES

Each school has recreational facilities on site or is located adjacent to park and recreational areas.

Howard Community College and the Howard County Public Library are located near the study area.

Other recreational areas and facilities include Symphony Woods, Lake Kittamaqundi, Atholton Park, Martin Road Park, Merriweather Post Pavillion, Children's Zoo and the Columbia Mall. None of these areas would be impacted by the proposed improvements. A Park and Ride Lot is located within the study area.

Hospital and medical services are provided by the Howard County General Hospital and the Medical Building situated near the study area.

The Howard County Police located in Ellicott City and the Maryland State Police, Waterloo Barracks, serve the Columbia area.

A volunteer fire company provides both fire and ambulance service.

The U.S. Post Office is located northwest of the study area.

Public water and sewage services are available throughout the study area. Their capacity is adequate to support anticipated area growth.

2. Economic Environment

Major employers in the study area include Columbia Mall, Howard County General Hospital, Howard Community College and numerous clusters of commercial office and retail development scattered throughout the area.

This development is oriented both to the needs of the local community and the larger metropolitan region.

Columbia Town Center is one of the major commercial centers in the Baltimore-Washington region and has a retail trade area of 500,000 people. Its commercial activities are structured to provide a balance of local, community and regional needs within the development framework of the county.

An analysis of census data for the Census Tracts indicates the majority of people are employed in administrative, professional and educational services, manufacturing and retail trade.

The 1979 median household income of the population in these Census Tracts was $32,674 which is considerably higher than the county wide median of $27,612.

3. Land Use

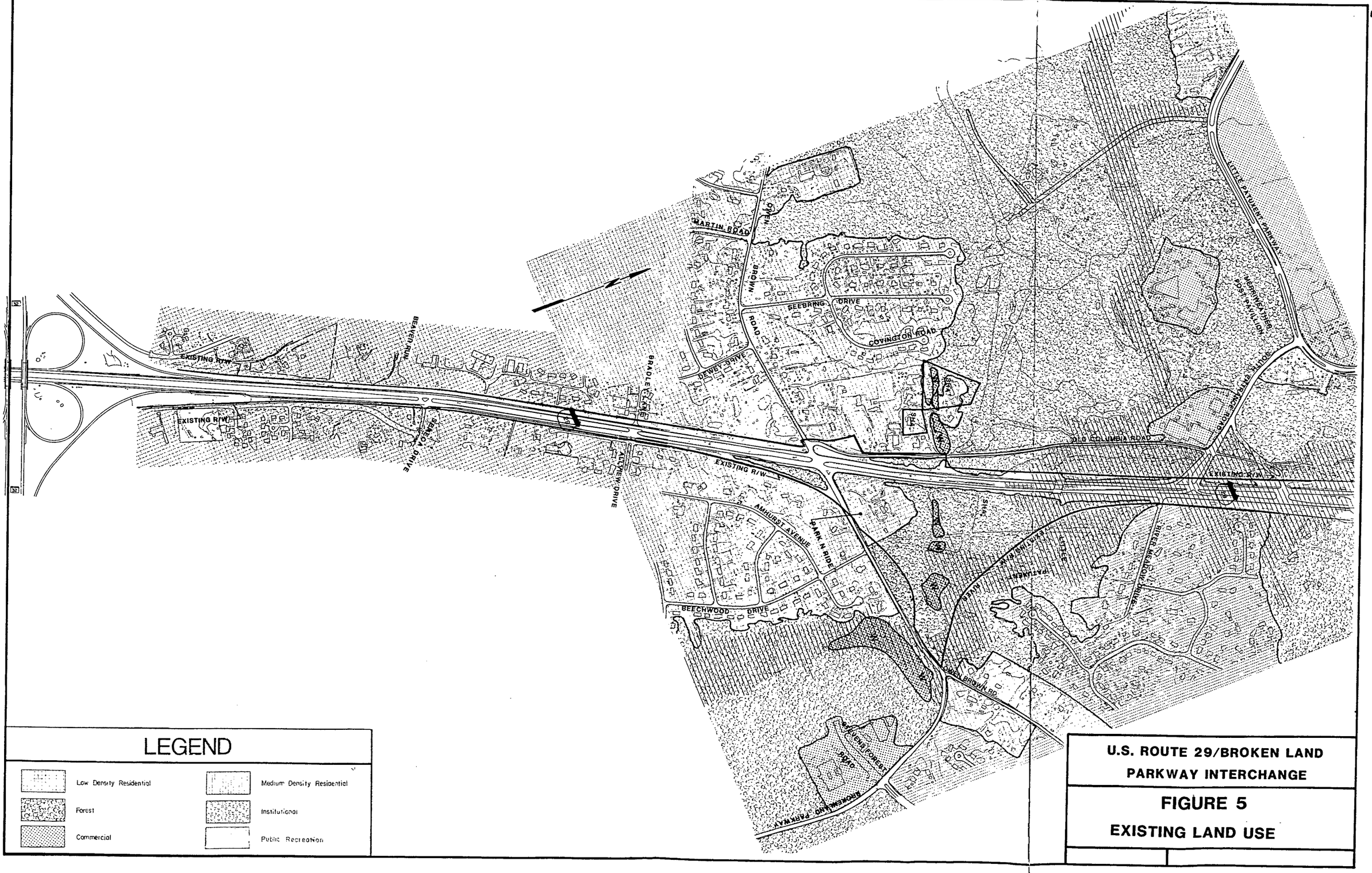
a. Existing (Figure 5)

The study area's predominant land uses include residential, forested, and commercial. Low and medium density residential development predominate on the east and lower west side of the study area. Forested uses are situated along both sides of U.S. Route 29 predominating on the west side north and south of Owen Brown Road. Commercial and institutional uses are concentrated along Little Patuxent Parkway in the study area.

No agricultural activity exists in the study area.

b. Future (Figure 6)

Howard County has developed a long range General Plan (1981) to guide future growth and development in the



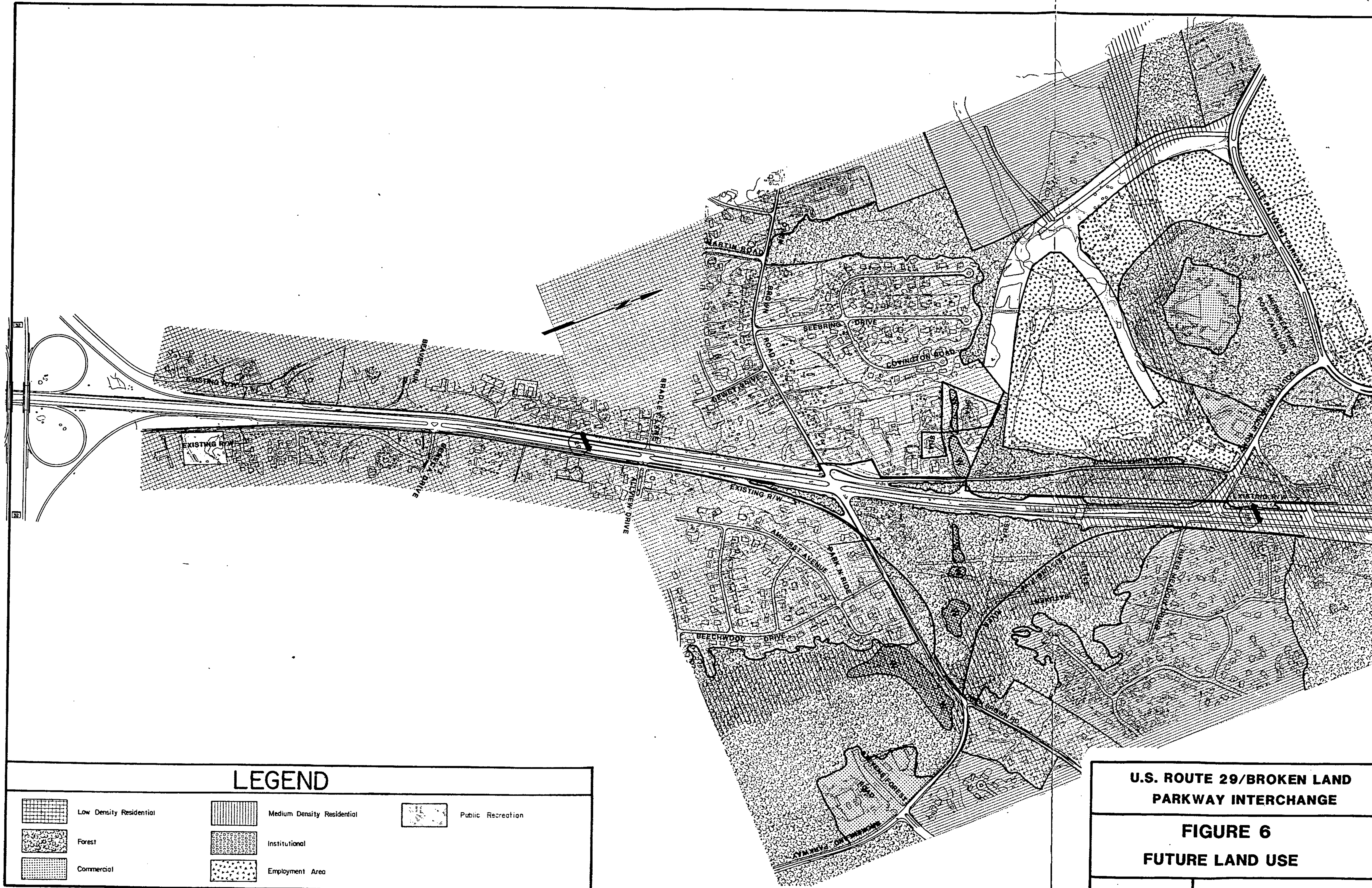
LEGEND

- Low Density Residential
- Medium Density Residential
- Forest
- Institutional
- Commercial
- Public Recreation

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 5

EXISTING LAND USE



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 6

FUTURE LAND USE

county. It's main purpose is to channel orderly development to those areas most suited for future growth.

New low to medium density residential development is planned for some of the vacant land west of U.S. Route 29 and north of Owen Brown Road. East of U.S. Route 29, existing low to medium density residential development will continue to expand. Some additional commercial development is planned for the area south of the Merriweather Post Pavillion and the area to the east of Broken Land Parkway.

The remainder of the study area will maintain its existing character.

4. Historic and Archeological Resources

There are no archeological sites in the vicinity of the proposed interchange improvements (See Correspondence Section).

There is a historic site (Athol, HO 37) located on the west side of U.S. Route 29 which is probably eligible for the National Register of Historic Places.

5. Natural Environment

a. Topography/Physiography

Terrain in the study area varies from gentle to moderate slopes of 5 to 25 percent. The entire area lies within the Eastern Division of the Piedmont Province, with elevations ranging from 280 to 380 feet above sea level.

b. Geology

The study area is located over a lenticular body of Guilford Quartz Monzonite, consisting of biotite-muscovite-quartz monzonite. This formation is surrounded by the more expansive Lower Pelitic Schist of the Wissahickon Formation.

This formation consists of medium to coarse grained biotite-oligoclase-muscovite-quartz shcist, with garnet, staurolite, and kyanite; fine to medium grained semipeltic schist; and schistose psammitic gramulite.

The ancient crystalline rocks of the Piedmont region have yielded varied mineral products. Slate, granite, gneiss, gabbro, serpentine, and marble have been used as both building stone and crushed stone, some of which is still quarried in parts of Howard County. Metals include areas of iron, copper, chrome, lead, and zinc. Non-metals include flint (quartz), feldspars, kaolin, talc, asbestos and mica. No mining activity is currently in progress in the study area.

c. Soils

Soils in the study area belong to the Glenelg Chester-Manor association. They are generally deep, well drained, gently sloping soils. Farming is intensive on this association. Large areas are suited to row crops, hay crops, forage, pasture and orchards.

A large portion of the study area contains soils that have been identified by the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS) as "Prime Farmland." These soils lie primarily along the Little Patuxent River and its tributaries. Other areas of prime farmland soils are generally located east of the project area. There is no agricultural use in the immediate project area.

d. Groundwater

Groundwater is not uniformly distributed throughout the metamorphised and crystalline formations typical of the Piedmont Province. Water is generally confined to joints

and other fractures which occur randomly throughout these formations. The size of the joints, and hence the amount of water in them varies considerably. Groundwater in the study area is provided by wells in Hydrologic Unit III of the Piedmont Aquifers. These are some of the poorest aquifers within the mapped area.

The Patuxent formation outcrops the area generally east of U.S. Route 1 outside of the study area.

e. Surface Water

The Little Patuxent River and its tributaries provide drainage for the entire study area. The Maryland Department of Natural Resources (DNR), Water Resources Administration 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

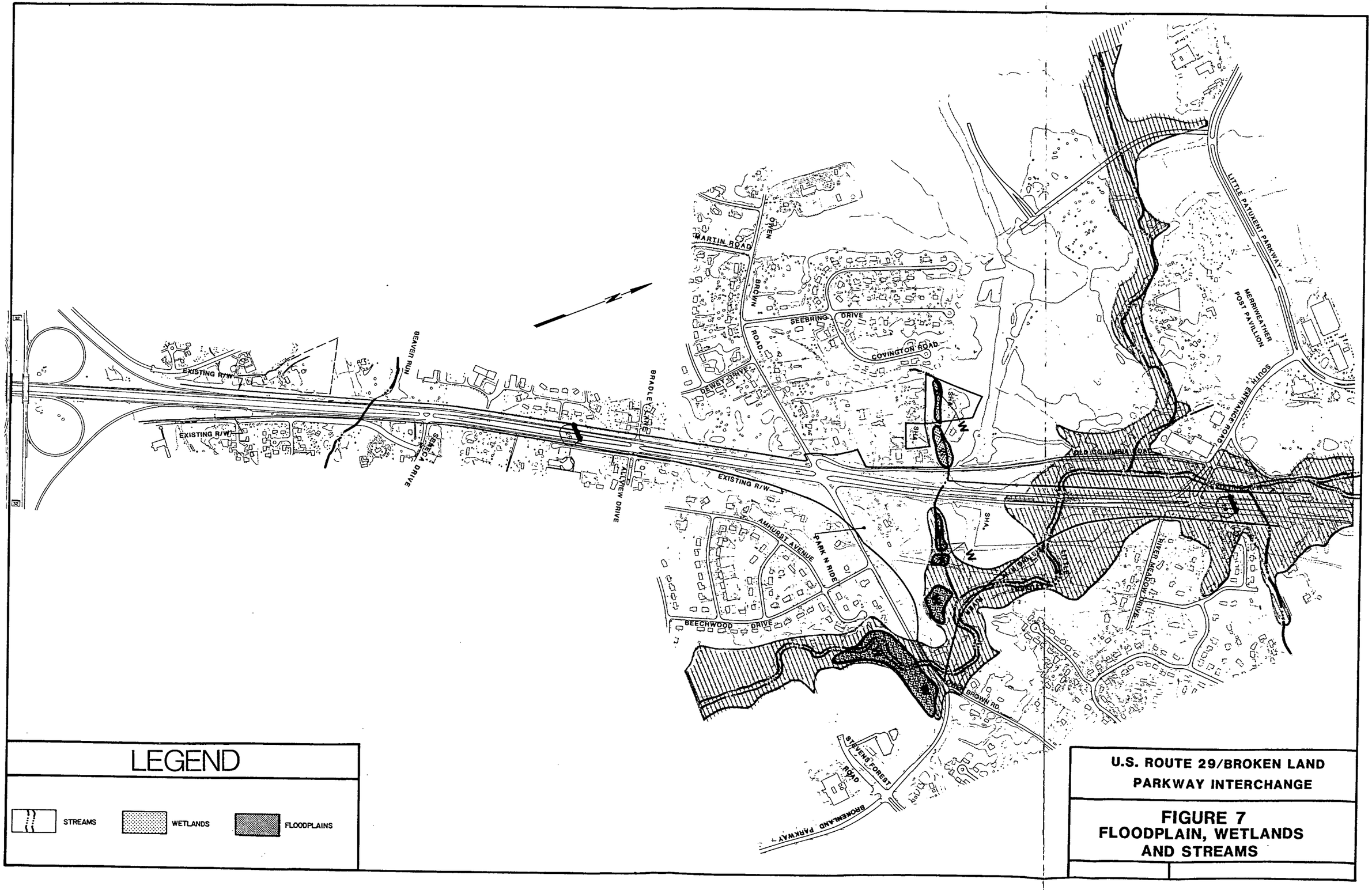
Class III - Natural Trout Waters

Class IV - Recreational Trout Waters

All waters of the state are Class I, with additional protection by higher classifications. All waters in the study area are designated Class I.

f. Floodplains

The 100-year floodplains in the study area are shown on Figure 7. These floodplains are based on U.S. Department of Housing and Urban Development (HUD) Flood Hazard Boundary and Flood Insurance Rate mapping as well as the Little Patuxent and Red Hill Drainage Area Hydrology Model. (Howard County Department of Public Works).



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 7
FLOODPLAIN, WETLANDS AND STREAMS

g. Ecology

1) Terrestrial

Much of the study area has been developed into residential areas with commercial activity along the highways. However, woodland or forested areas within the study limits can be subdivided into and identified by the vegetation associations listed below:

Tulip Poplar Association - is characterized by the presence of tulip poplar in the absence of any other charateristic species. Common associated species include red maple, sweet gum, green ash, greenbriers, coast pepperbush, poison ivy, Virginia creeper, black gum, southern arrowwood, American holly, common winterberry holly, flowering dogwood, grape, sweetbay magnolia, common highbush blueberry, elderberry, rose, spicebush, tassel-white and wax myrtle.

Sycamore - Green Ash, Box Elder, Silver Maple Association - This association is defined by the presence of any two (2) of the sycamore, green ash, box elder, or silver maple. Common associated species include red maple, Virginia creeper, white oak, flowering dogwood, grape, black cherry, northern red oak, spicebush, tulip poplar, black gum, Japanese honeysuckle, sassafrass, white ash, mockernut hickory, poison ivy, southern arrowwood, black oak, pignut hickory, brambles, greenbrier and ironwood.

Old-Field - is a younger successional stage of forest communities. The flora of these areas are varied but typically contain numerous grasses, osters, golden rods, sumac, various shrubs and saplings. This habitat is

distributed throughout the study area.

2) Aquatic Habitat

Several wetland areas are located within the study area and are generally associated with area streams. Wetlands in the study area have been identified by field inspections and the U.S. Department of the Interior, National Wetland Inventory (Draft, June, 1983).

The predominant wetland types in the study are briefly described below. Wetlands in the study areas are identified in Figure 7.

Palustrine Forested Broad-leaved Deciduous Temporary - characterized by woody vegetation, 6 m or taller; dominant species include red maple (Acer rubrum), black willow (Salix nigra) and river birch (Betula nigra).

Palustrine Open Water - Diked/Impounded or Excavated bodies of water which basins vary from being Intermittently Exposed/Permanent to semi-permanent, depending on the water regime and local water sources; can include decorative landscaping ponds, sedimentation ponds, and stormwater management facilities.

Palustrine Scrub-shrub Broad-leaved Deciduous Temporary - areas dominated by woody vegetation less than 6 m tall; includes tree shrubs, young trees, and trees or shrubs which are small or stunted due to environmental conditions; typical dominanta include adlers (Alnus spp.), willows (Salix spp.), buttonbush (Cephalanthus, spp.), and young trees such as red maple (Acer rubrum).

h. Endangered Species

Coordination with the U.S. Fish and Wildlife Service

and the Maryland Department of Natural Resources indiates that no threatened or endangered species are known to inhabit the study area.

6. Existing Air Quality

The U.S. Route 29/Broken Land Parkway interchange 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-D.

7. Existing Noise Conditions

Nine (9) noise sensitive areas (NSA) have been identified in the U.S. 29/Broken Land Parkway study area. Descriptions of the noise sensitive areas are provided in Table 4. The location of the NSA's are shown in Figures 23, 26, 27, and 29. A copy of the technical analysis report is available at the State Highway Administration, 707 North Calvert Street, Baltimore, Maryland, 21202.

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 a 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 Federal-Aid Program Manual (FHPM) 7-7-3, noise abatement criteria for various land uses. (See Table 5).

TABLE 4
Noise Sensitive Areas
U.S. Route 29/Broken Land Parkway Interchange

Noise Sensitive Area	Activity Category	Description
1	B	Covington Road, two story single family frame residence
2	B	Owen Brown Road, two story single family brick and frame residence
3	B	U.S. Route 29, two story single family frame and brick residence
4	B	Owen Brown Road, two story single family frame residence
5	B	Amhurst Avenue, two story single family frame and brick residence
6	B	Babylon Crest, two story single family frame and brick residence
7	B	Chell Road, one story single family frame and brick residence

Noise Sensitive Area	Activity Category	Description
8	B	Bushranger Path, Split level single family frame residence
9	B	Martin Road, two story single family stone residence (historic)

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 U.S. 29/Broken Land Parkway 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 8 in Section IV-E along with the predicted noise levels; also see Figures 23, 26, 27 and 29 for NSA receptor locations.

TABLE 5

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

ACTIVITY CATEGORY	Leq (h)	L_{10}(h)	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	60 (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 intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	--	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

II. NEED FOR THE PROJECT

II. NEED FOR THE PROJECT

A. Purpose

The purpose of this study is to analyze alternates to improve the existing traffic levels of service at U.S. Route 29/Owen Brown Road and U.S. Route 29 at Mall South Entrance. This is to be accomplished with a new grade separated interchange at U.S. Route 29.

The existing at-grade intersection at U.S. Route 29 and Owen Brown Road operates with considerable difficulty in handling high volumes of through and turning traffic resulting from development in the Columbia area. Peak hour traffic on U.S. Route 29, Broken Land Parkway, and Owen Brown Road is congested. The proposed interchange will permit free flow on U.S. Route 29 and Broken Land Parkway.

While short term improvements are being provided through improved signalization to increase turning movement capacity, the present delays and anticipated increases in traffic volumes warrant the study of an interchange at this location.

B. Project Background

The long range goal of the State Highway Administration is to provide additional capacity throughout the U.S. Route 29 corridor by improving major intersections and widening U.S. Route 29.

The current 1985 Highway Needs Inventory lists improvements to the U.S. Route 29/Broken Land Parkway Interchange and the 1982 Howard County Master Plan includes the improve-

ment of this intersection in its transportation plan. The project also conforms with the General Development Plan, Baltimore Region approved by the Regional Planning Council. The project is included in the Maryland Department of Transportation's Consolidated Transportation Program (CTP) for 1985-1990, for Project Planning and Preliminary Engineering. The subject interchange is considered by Howard County elected officials as one of their highest transportation priorities.

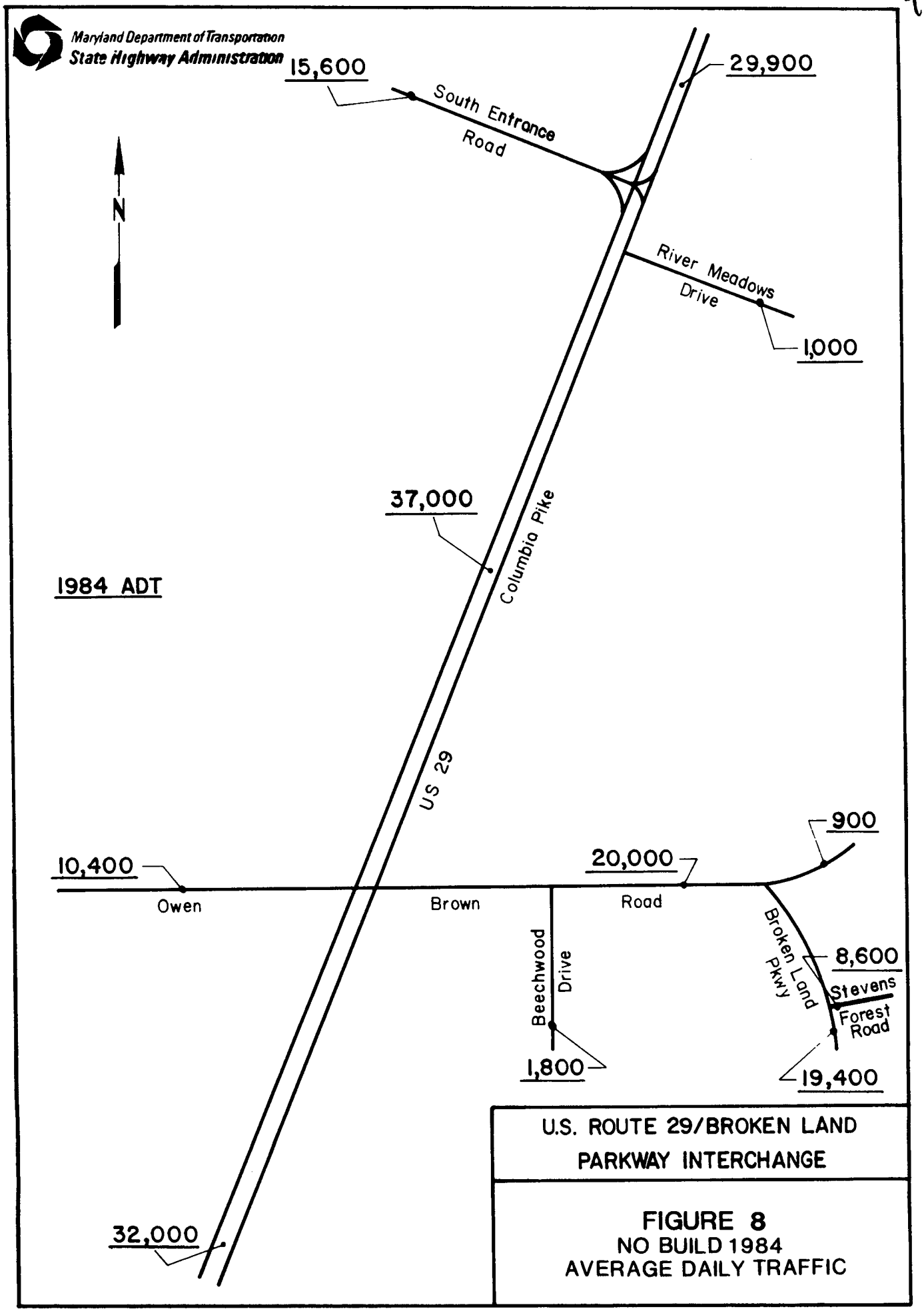
C. Existing and Projected Traffic Conditions

With the ongoing residential development throughout the study area, traffic projections indicate an increase of 41,500 vehicles/day for U.S. Route 29 and 14,300 vehicles/day for Owen Brown Road and Broken Land Parkway between 1984 and 2015 under No-Build conditions. This projected traffic increase will cause additional congestion and delays at the existing intersection of U.S. Route 29 and Owen Brown Road.

The existing daily truck useage which comprises 6% of the average daily traffic (ADT) for U.S. Route 29 and 3% of the ADT for Owen Brown Road and Broken Land Parkway, will remain the same under the 2015 No-Build condition.

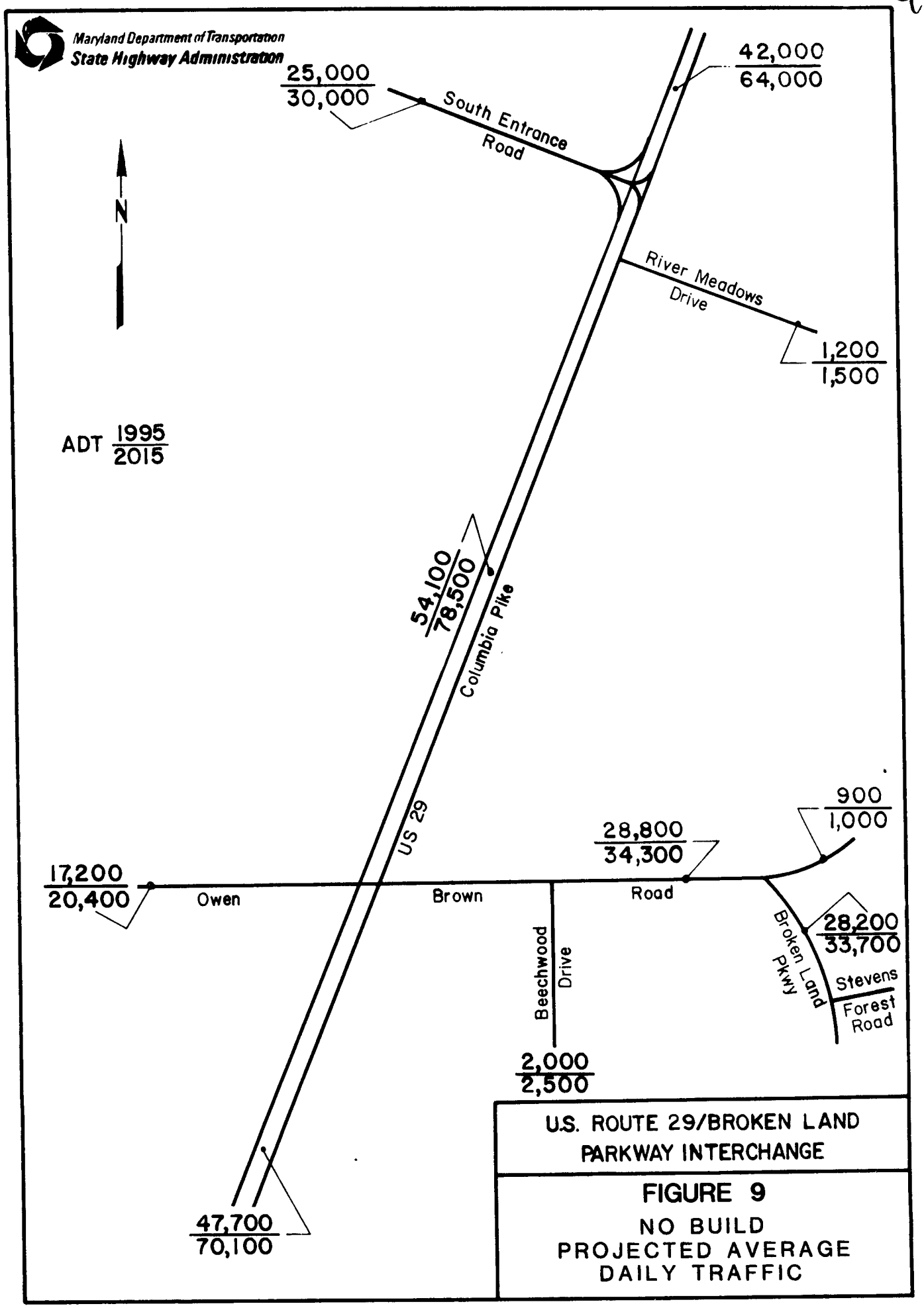
The average daily traffic for the No-Build Alternate is shown in Figure 9. The ADT for the proposed Build Alternates is shown in Figures 10-15.

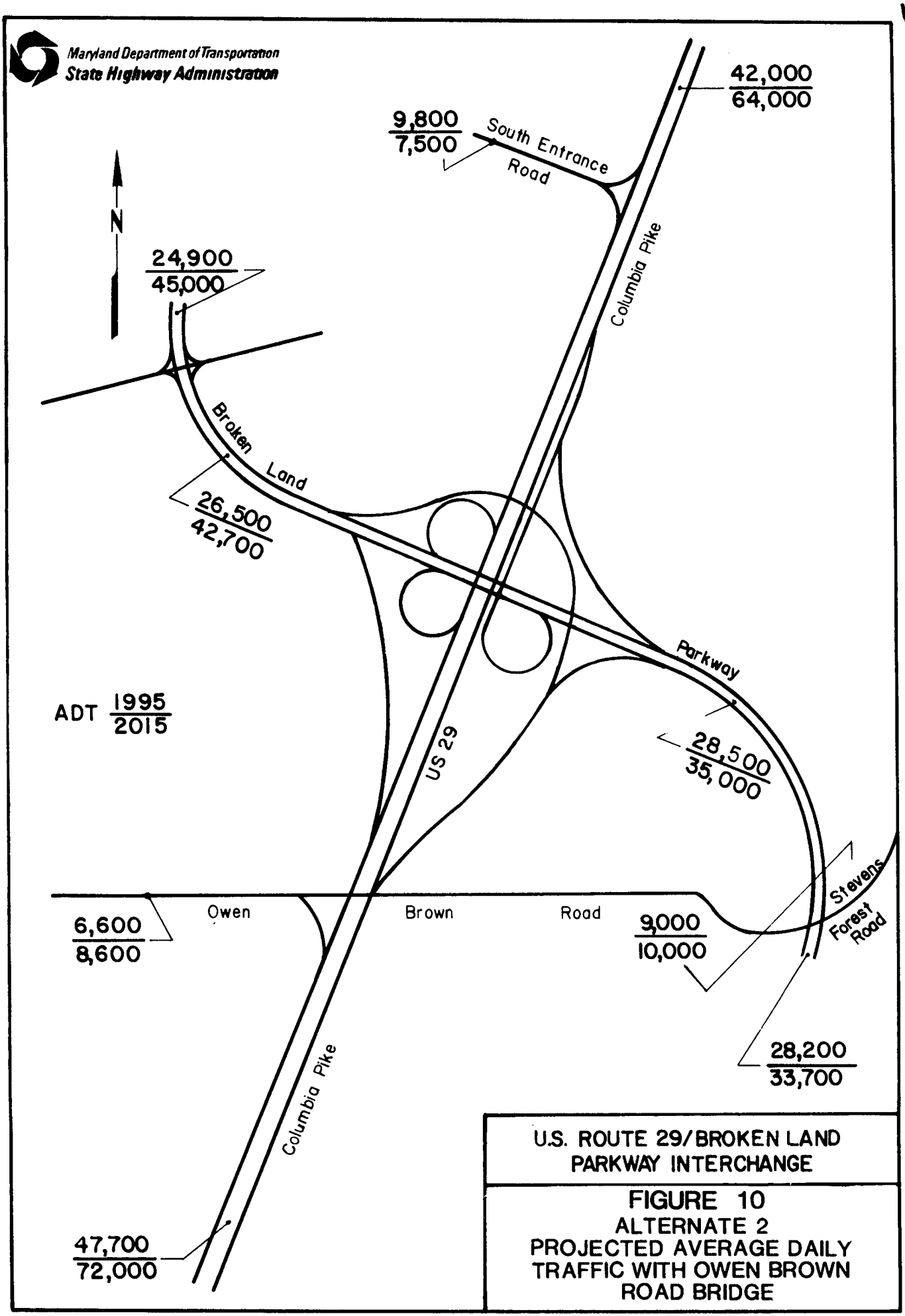
Quality of traffic flow along a highway is measured in terms of level of service (L/S). This measure is dependent upon highway geometry and traffic characteristics and ranges



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

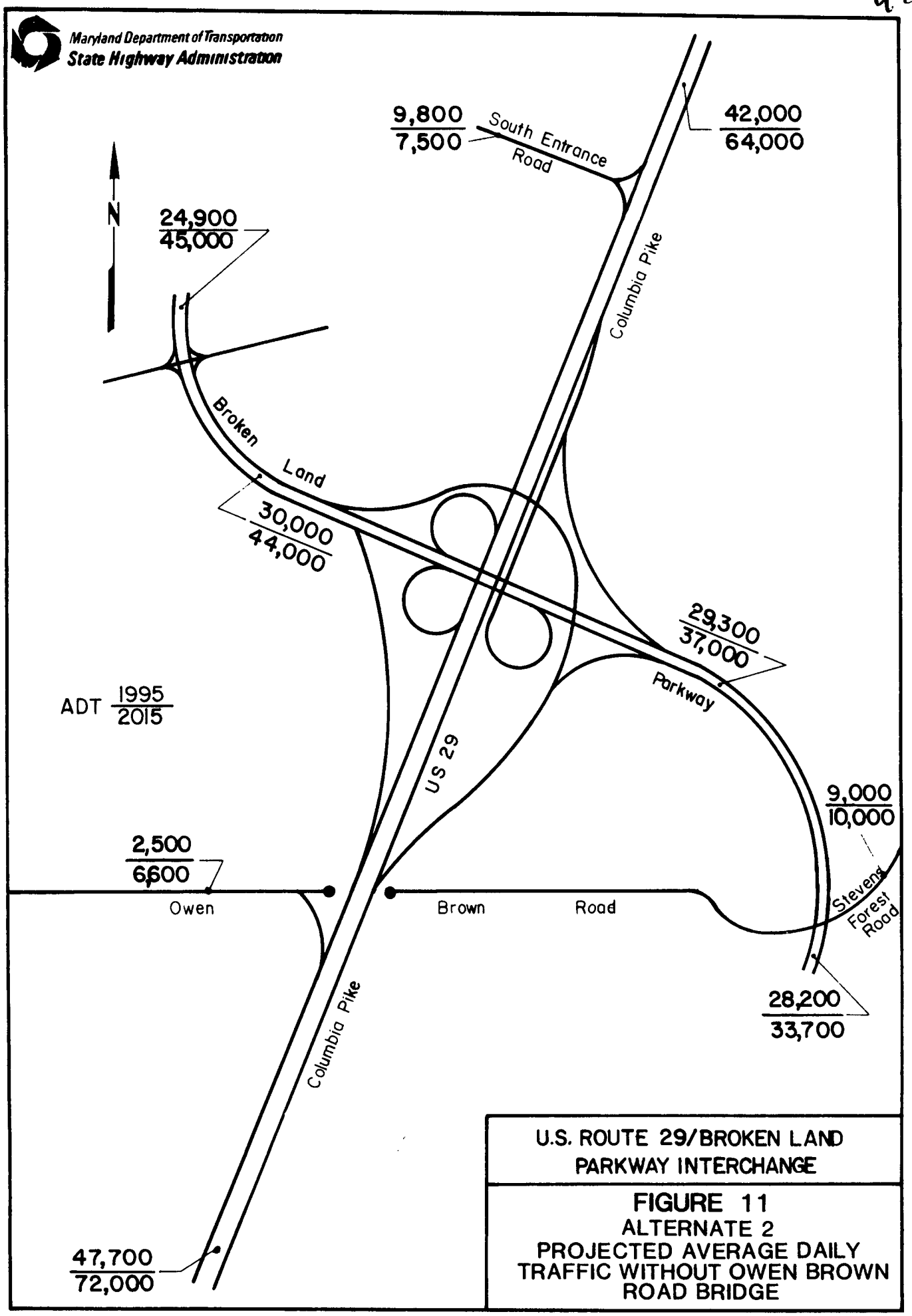
FIGURE 8
NO BUILD 1984
AVERAGE DAILY TRAFFIC


Maryland Department of Transportation
State Highway Administration
25,000
30,000
South Entrance
Road
42,000
64,000
N
River Meadows
Drive
1,200
1,500
ADT 1995
2015
54,100
78,500
Columbia Pike
US 29
900
1,000
28,800
34,300
17,200
20,400
Owen
Brown
Road
Broken Land
Pkwy
28,200
33,700
Stevens
Forest
Road
Beechwood
Drive
2,000
2,500
47,700
70,100
U.S. ROUTE 29/BROKEN LAND
PARKWAY INTERCHANGE
FIGURE 9
NO BUILD
PROJECTED AVERAGE
DAILY TRAFFIC



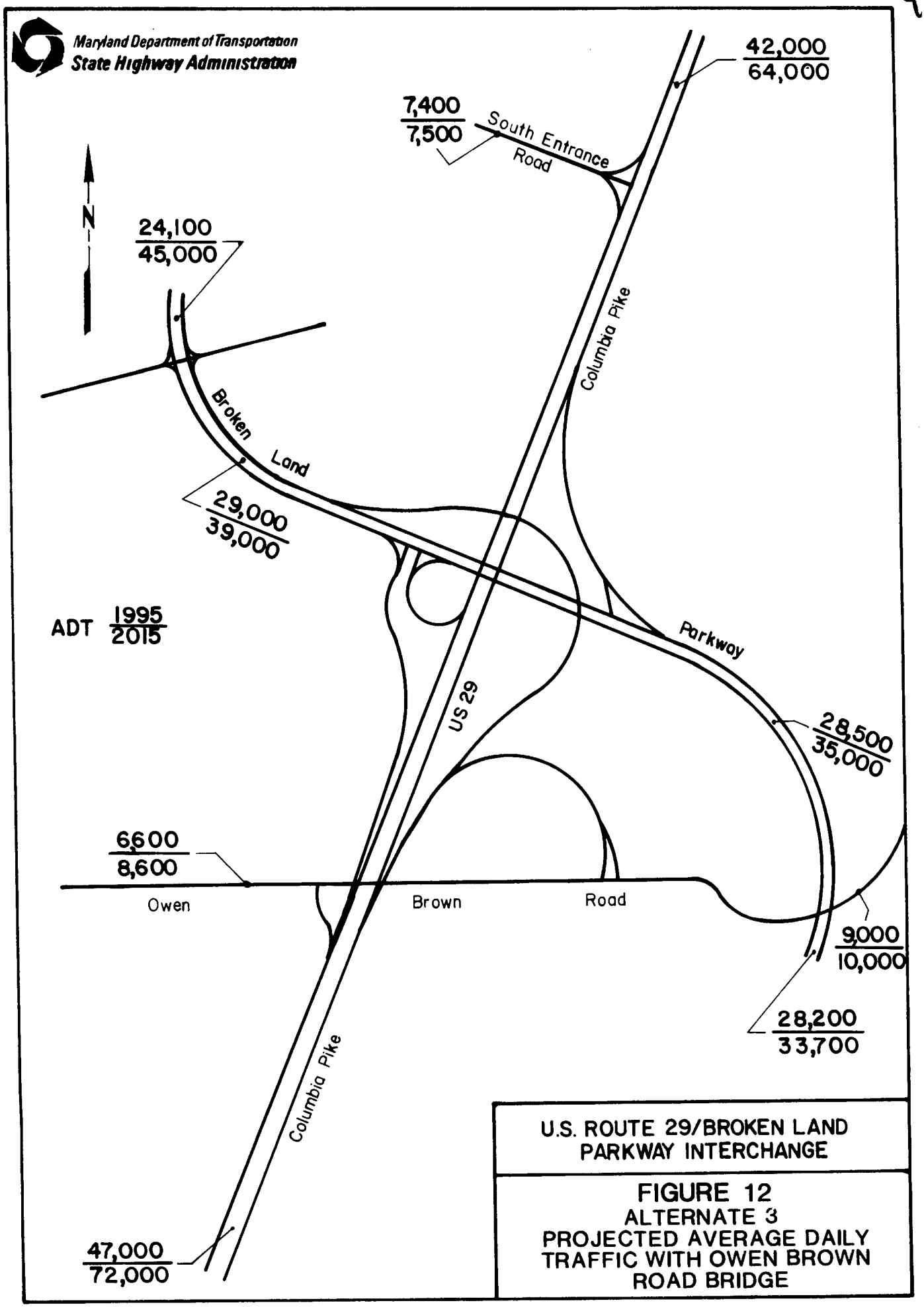
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 10
ALTERNATE 2
PROJECTED AVERAGE DAILY TRAFFIC WITH OWEN BROWN ROAD BRIDGE



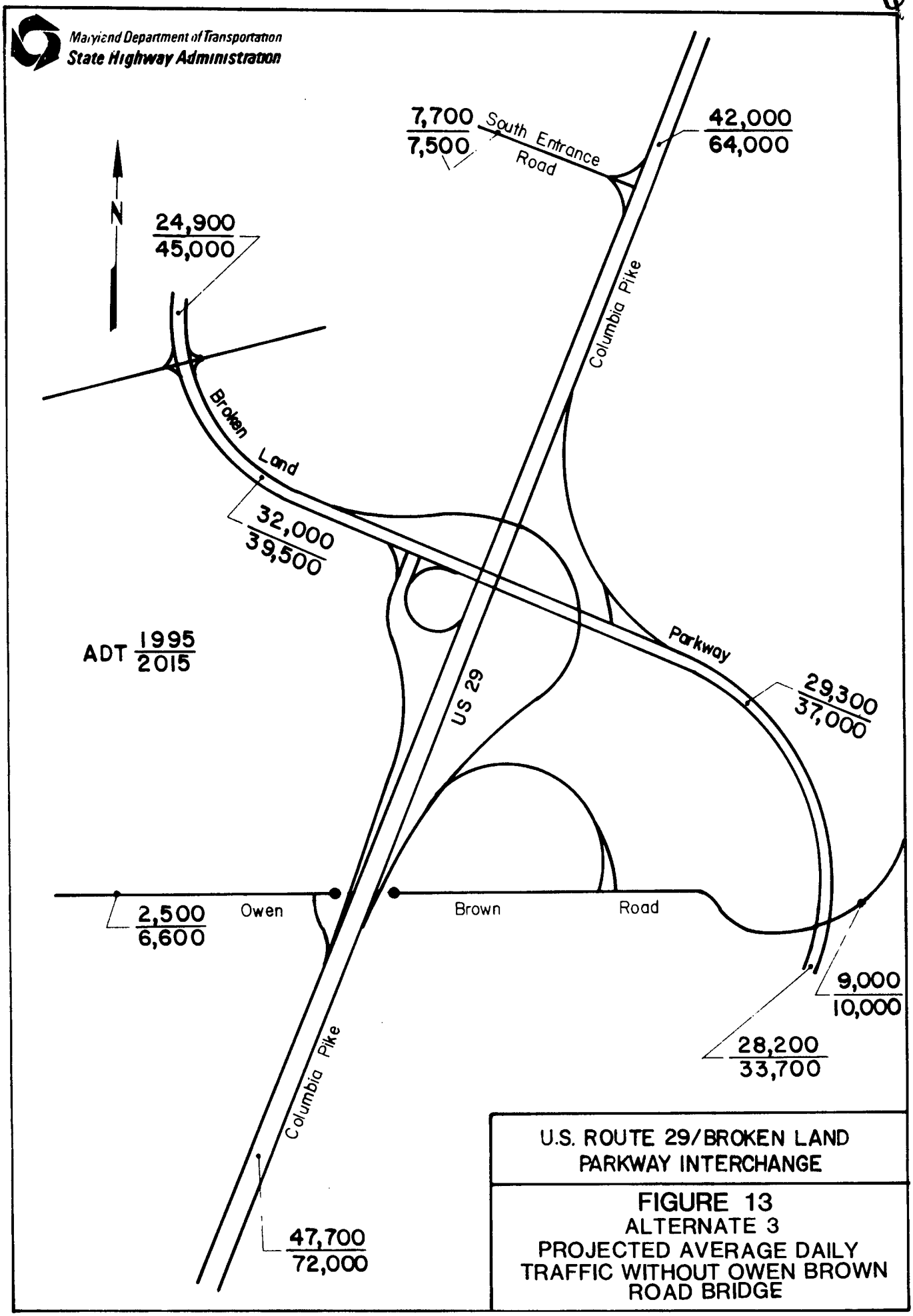
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 11
ALTERNATE 2
PROJECTED AVERAGE DAILY TRAFFIC WITHOUT OWEN BROWN ROAD BRIDGE



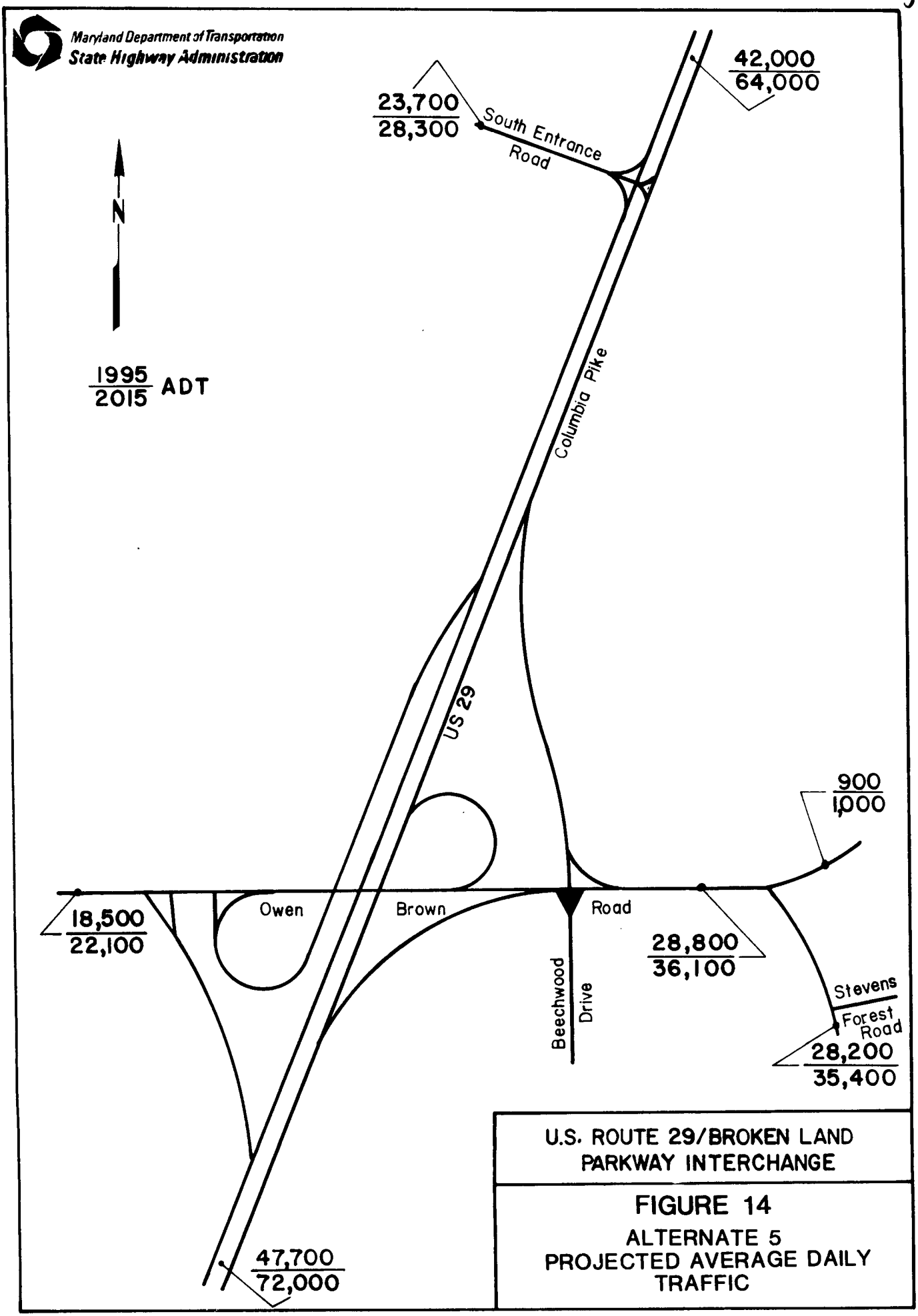
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 12
ALTERNATE 3
PROJECTED AVERAGE DAILY TRAFFIC WITH OWEN BROWN ROAD BRIDGE



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

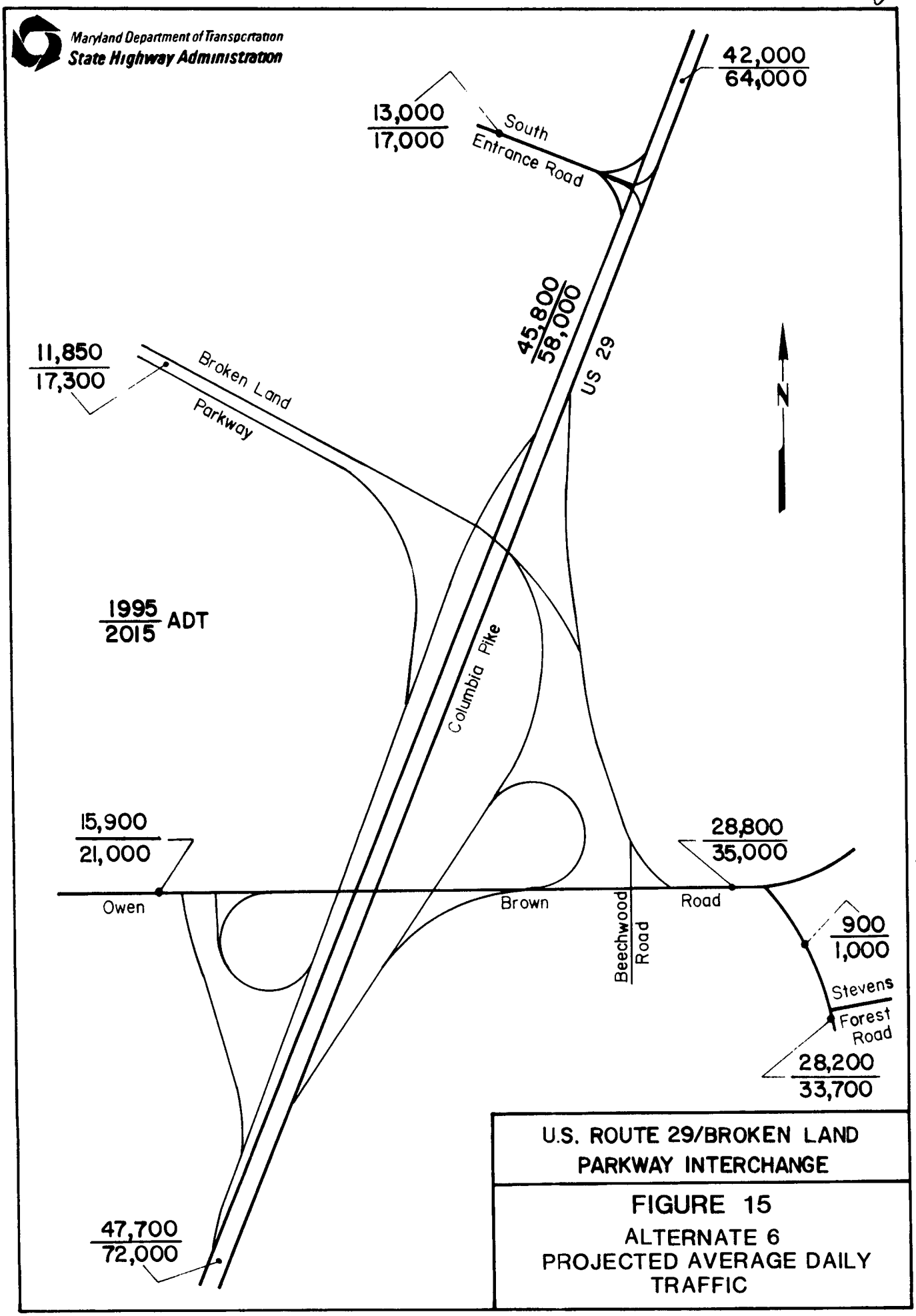
FIGURE 13
ALTERNATE 3
PROJECTED AVERAGE DAILY TRAFFIC WITHOUT OWEN BROWN ROAD BRIDGE



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 14

ALTERNATE 5
PROJECTED AVERAGE DAILY TRAFFIC

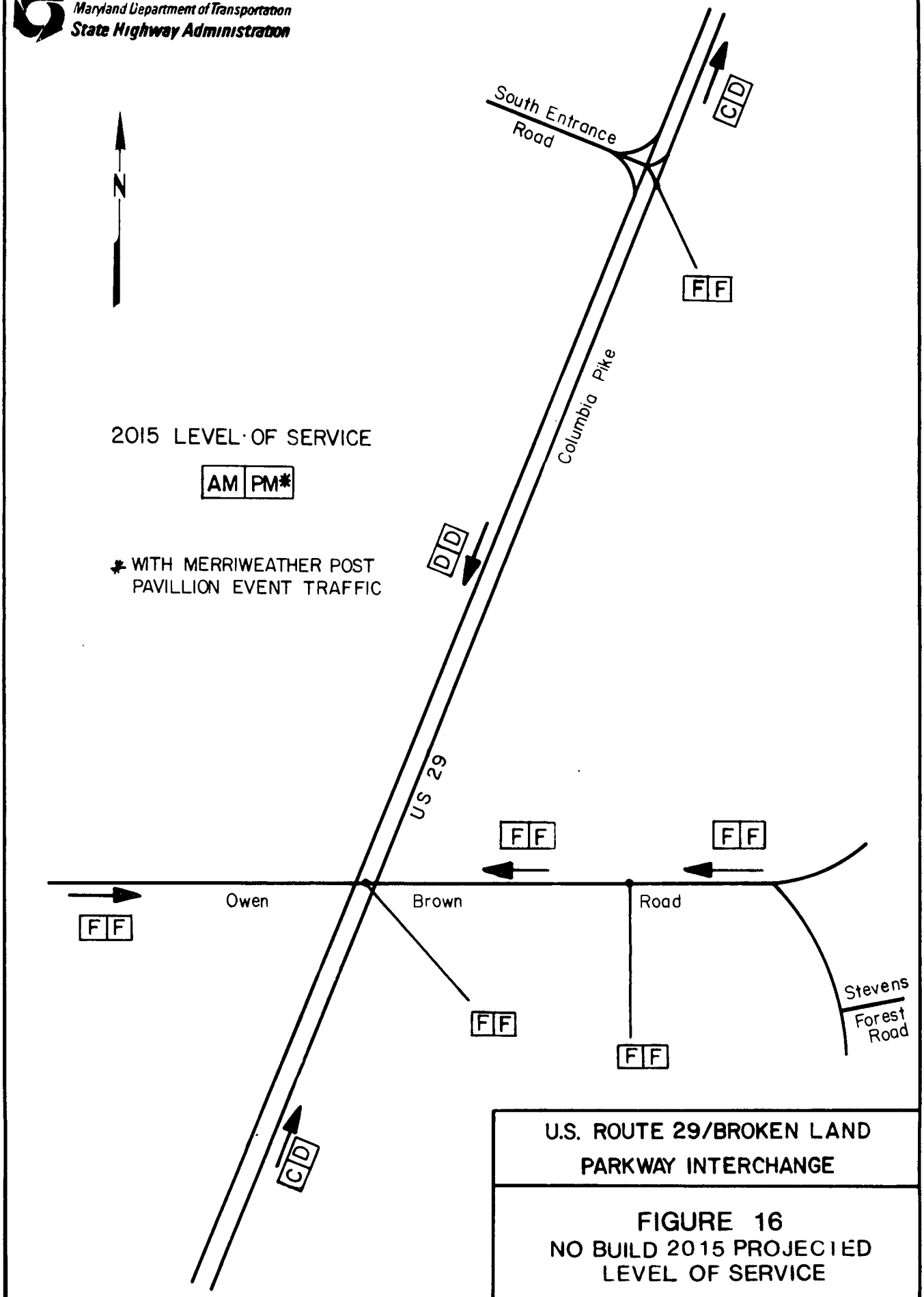


U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 15

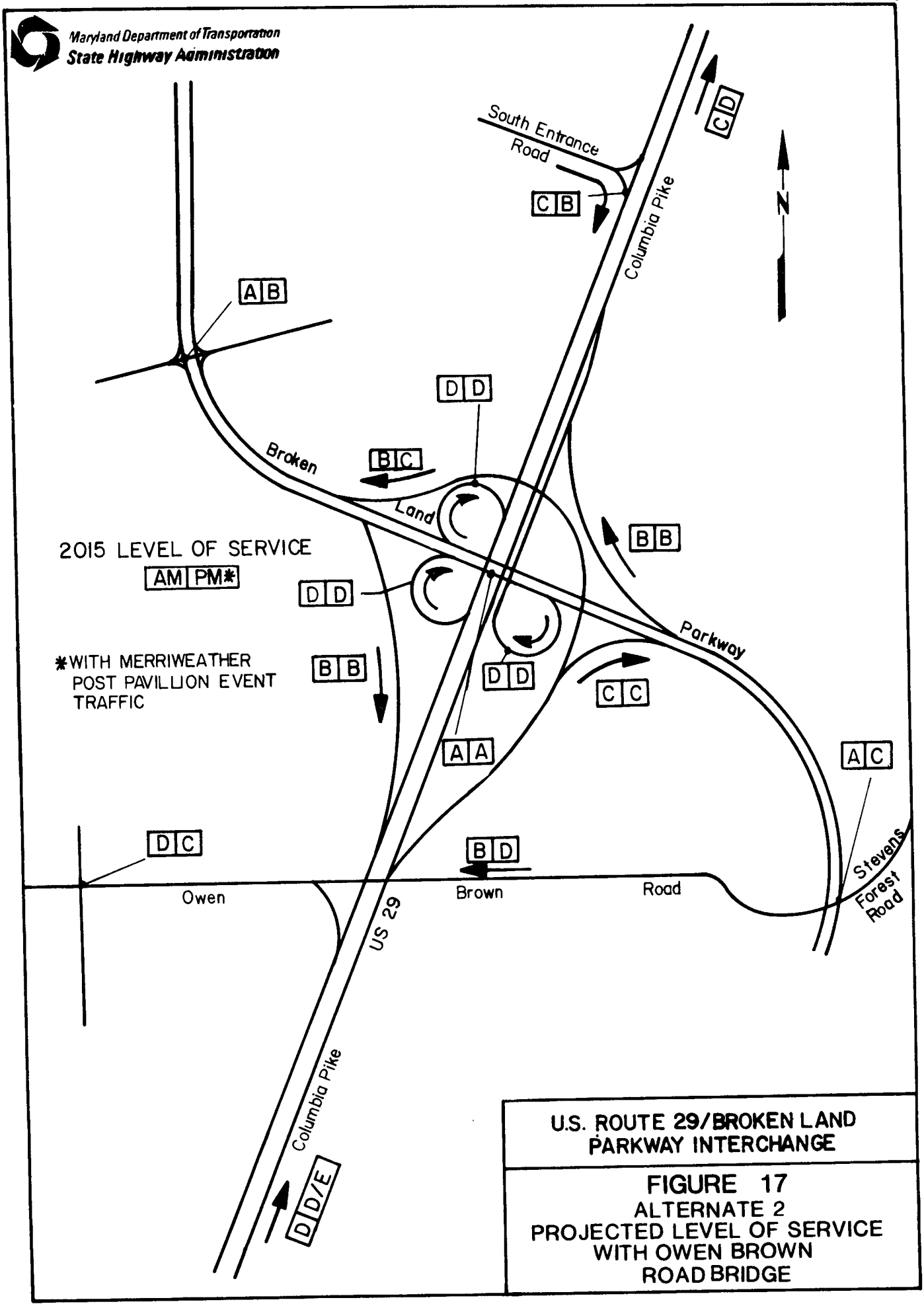
ALTERNATE 6
PROJECTED AVERAGE DAILY TRAFFIC

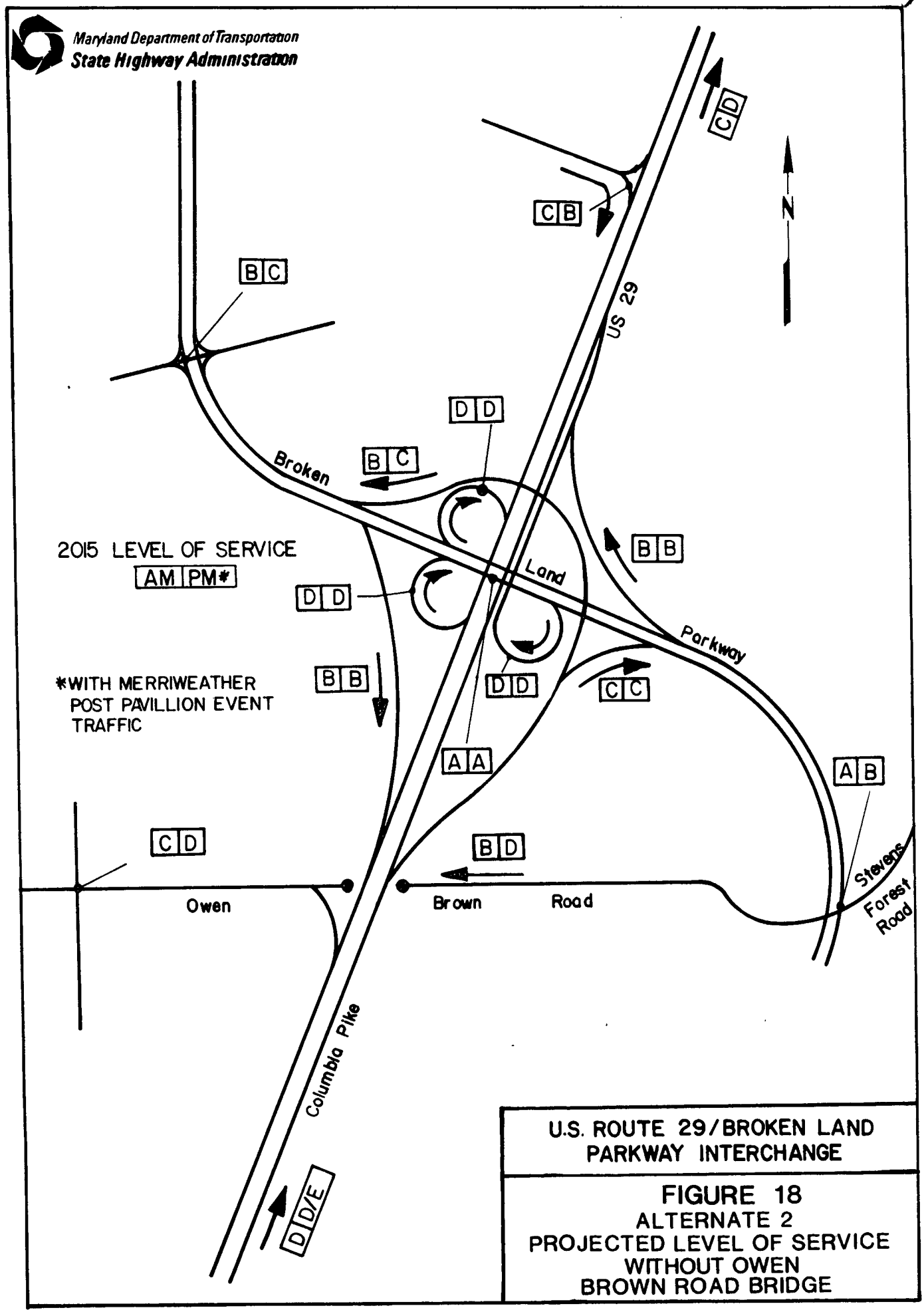
Maryland Department of Transportation
State Highway Administration



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

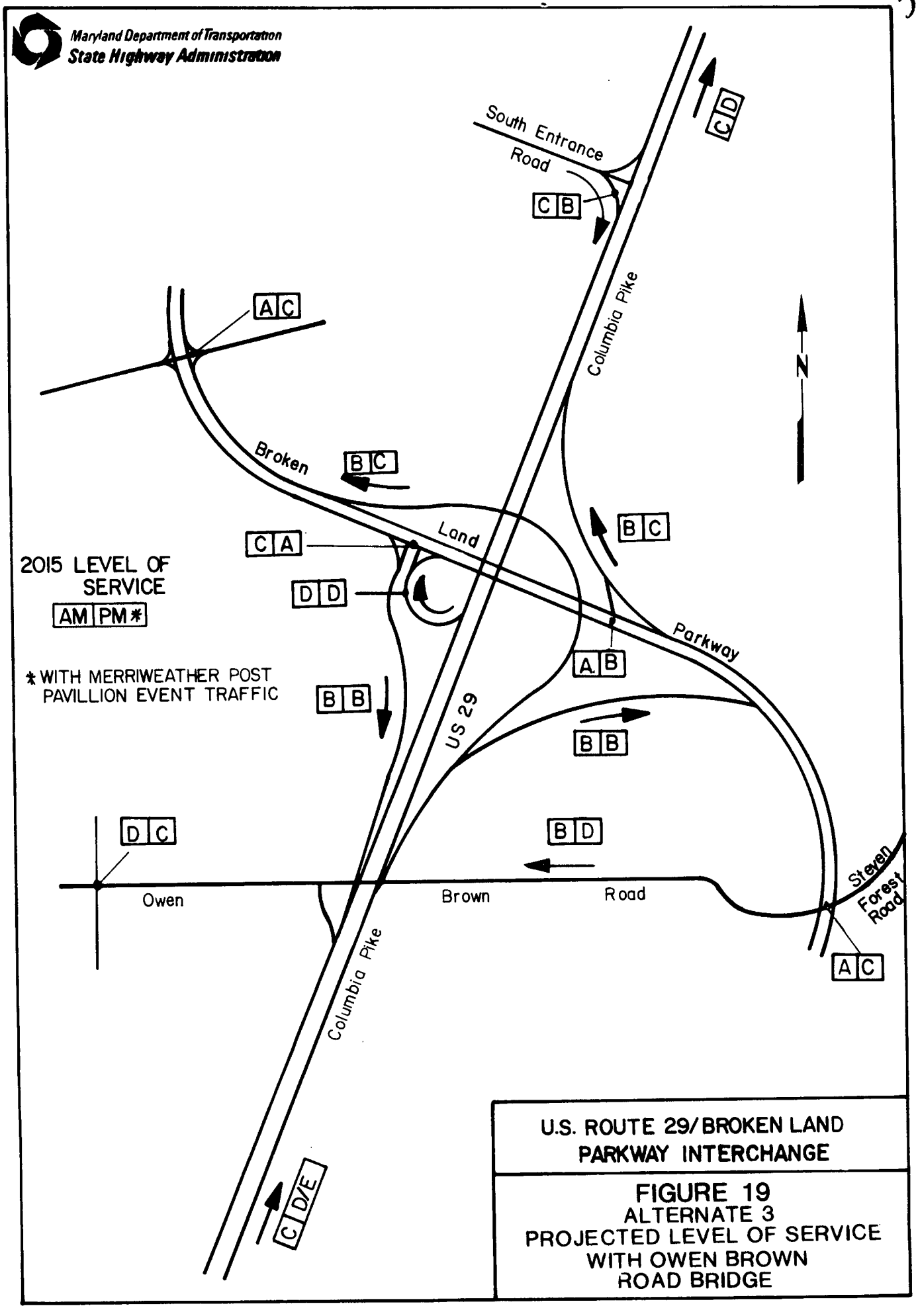
FIGURE 16
NO BUILD 2015 PROJECTED LEVEL OF SERVICE


Maryland Department of Transportation
State Highway Administration
South Entrance Road
C D
C B
Columbia Pike
N
A B
D D
Broken
B C
Land
2015 LEVEL OF SERVICE
AM PM*
B B
D D
*WITH MERRIWEATHER POST PAVILLION EVENT TRAFFIC
Parkway
B B
D D
C C
A A
A C
D C
B D
Owen
Brown
Road
Stevens Forest Road
US 29
Columbia Pike
D D/E
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE
FIGURE 17
ALTERNATE 2
PROJECTED LEVEL OF SERVICE
WITH OWEN BROWN
ROAD BRIDGE



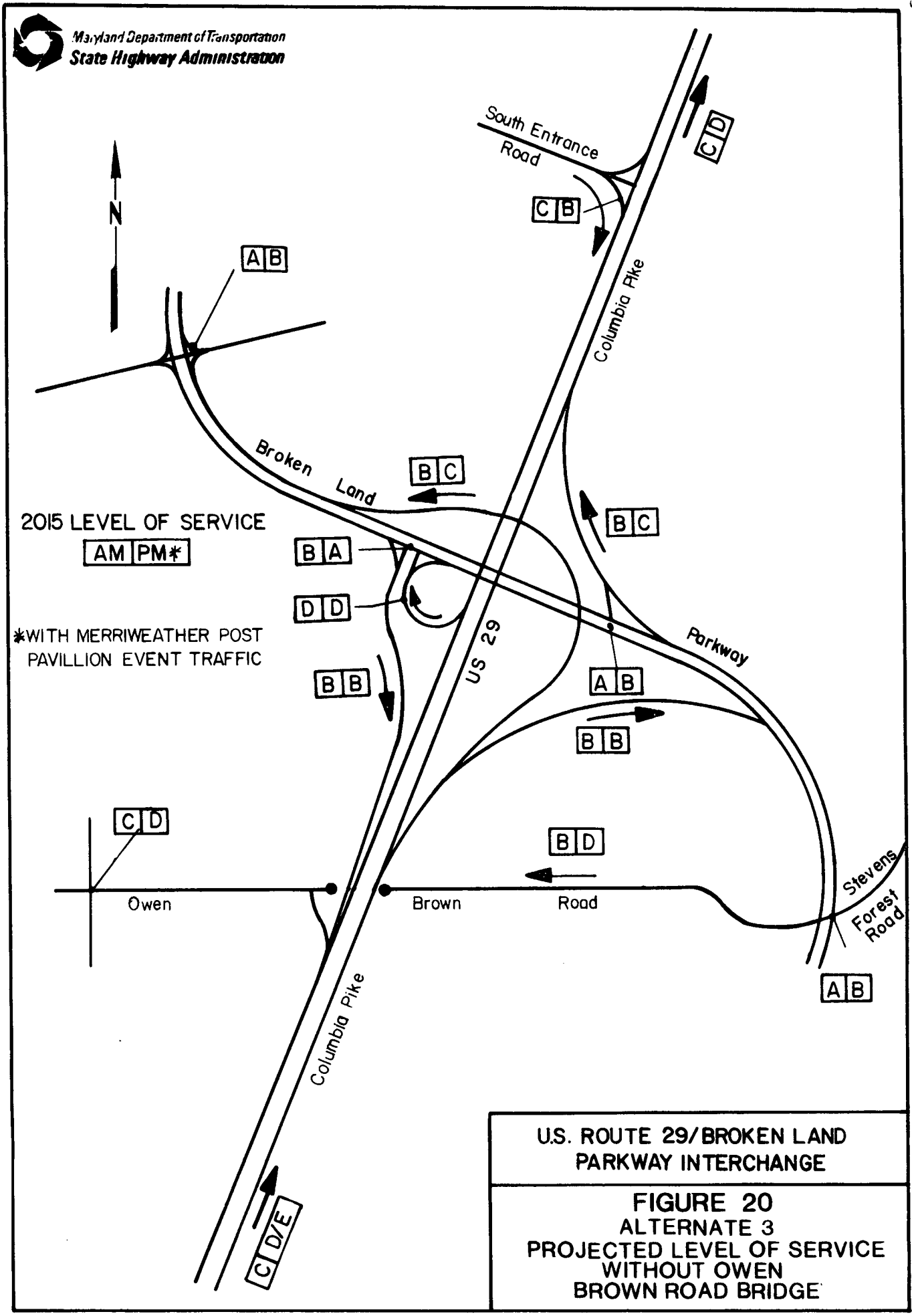
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 18
ALTERNATE 2
PROJECTED LEVEL OF SERVICE
WITHOUT OWEN
BROWN ROAD BRIDGE



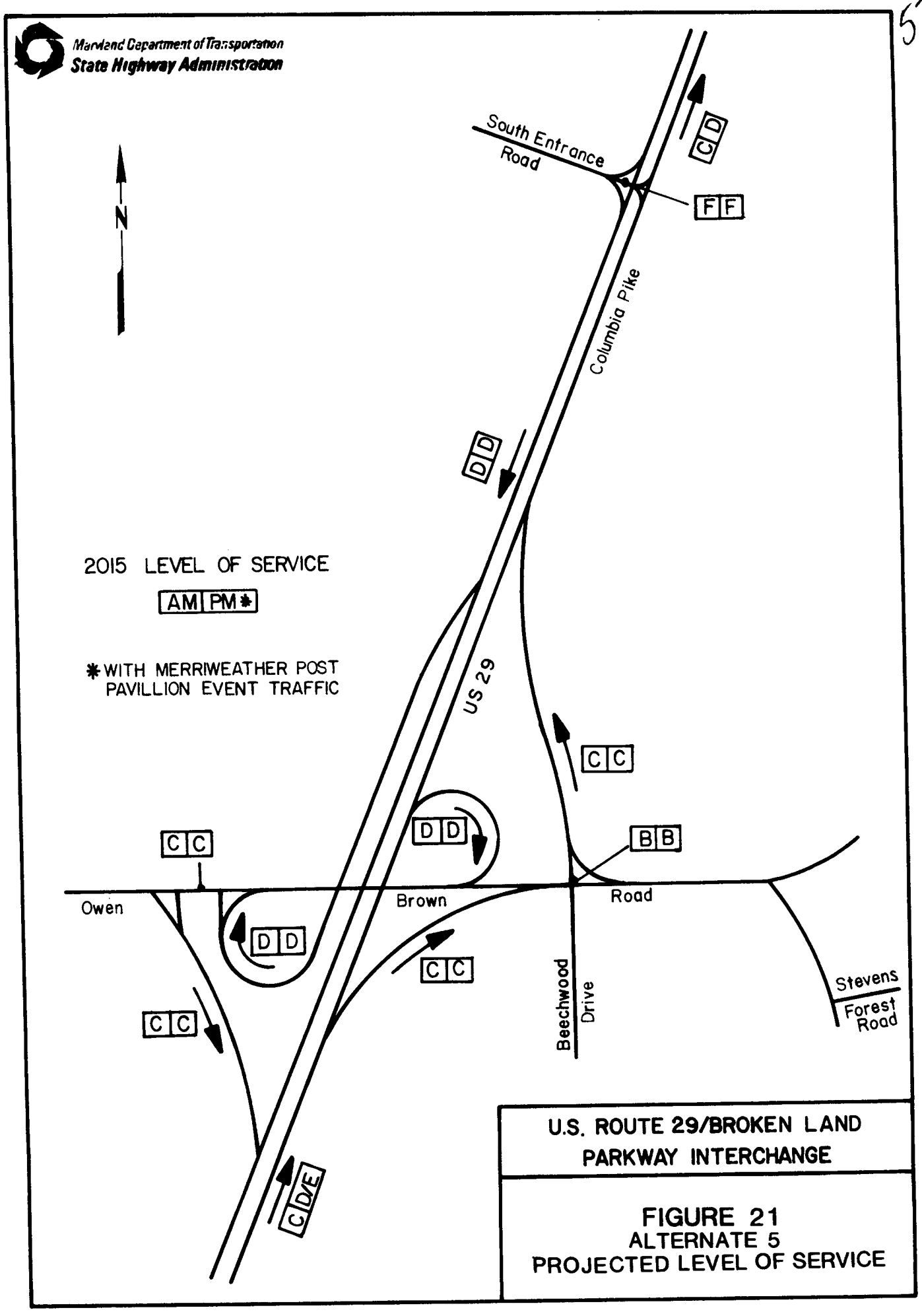
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 19
ALTERNATE 3
PROJECTED LEVEL OF SERVICE
WITH OWEN BROWN
ROAD BRIDGE



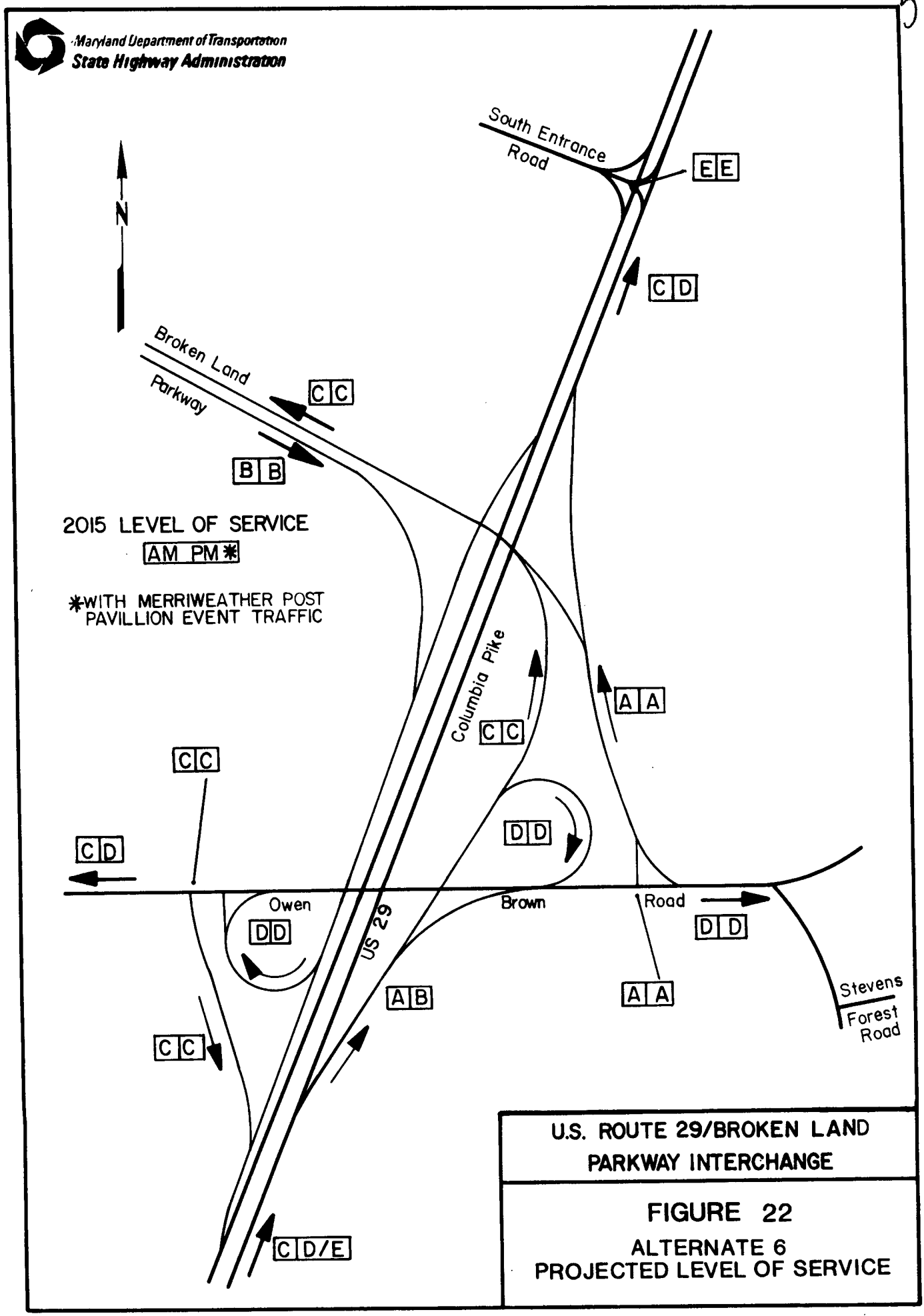
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 20
ALTERNATE 3
PROJECTED LEVEL OF SERVICE
WITHOUT OWEN
BROWN ROAD BRIDGE



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 21
ALTERNATE 5
PROJECTED LEVEL OF SERVICE



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 22

ALTERNATE 6
PROJECTED LEVEL OF SERVICE

from L/S "A" (Best) to L/S "C" (Minimum Desirable), to L/S "E" (Capacity), and L/S "F" (Worst or Forced Flow). Figures 17-22 show the levels of service for the four proposed Build Alternates.

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

L/S A is free flow, with low volumes and high speeds.

L/S 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.

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

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

L/S 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.

L/S F describes forced flow operation at low speeds, where volumes are below capacity.

D. Existing and Projected Safety Conditions

The network for the U.S. Route 29/Broken Land Project includes the following sections:

1. U.S. Route 29 from Bradley/Allview North to the intersection of Old Columbia Road and U.S. Route 29.

2. Owen Brown Road from Martin Road east to Broken Land Parkway. Broken Land Parkway between Stevens Forest and Owen Brown Road is included in this section due to its contiguous location and design vis-a-vis Owen Brown Road.

3. Little Patuxent Parkway from Governor Warfield Parkway east to South Entrance Road.

4. South Entrance Road from U.S. Route 29 to Little Patuxent Parkway.

5. Old Columbia Road from U.S. Route 29 to Owen Brown Road.

6. South Entrance Road from Old Columbia to South Entrance.

There was a total of 229 reported accidents for the entire study area during the years of 1981 through 1983, none of which resulted in a fatality. There were 117 Property Damage accidents and 112 Injury Accidents with 194 persons injured during the entire study period.

The study area in its entirety, experienced an accident rate of 294 accidents per one hundred million vehicle miles of travel, (acc/100 mvm) exceeding the weighted statewide average of 251/acc/100 mvm for similar design roadways now under state maintenance. The cost to the motoring and general public as a result of these accidents is approximately $1,708,000 per hundred million vehicles miles of travel.

The road sections listed below experienced high accident rates in one or more collision type categories:

1. U.S. Route 29 from Bradley/Allview to South Entrance Road: Rear End and Left Turn accidents.

2. Owen Brown Road from Martin to Stevens Forest: Rear End, Left Turn, Sideswipe and Fixed Object Accidents.

3. Little Patuxent Parkway from South Entrance Road to Governor Warfield Parkway: Angle, Rear End, Fixed Object, Sideswipe, and Left Turn Accidents.

However only the Little Patuxent Parkway section experienced a significantly higher total accident rate than our statewide expectations for this type design.

1. U.S. Route 29 Section

This section contains 3 High Accident Intersections (HAI's) for 1983: U.S. Route 29 at South Entrance Road, U.S. Route 29 at Allview/Bradley, and U.S. Route 29 at Owen Brown Road. (Note: The latter location also met the HAI criteria for 1981 and 1982.) U.S. Route 29 from .12 miles north of Allview/Bradley to .27 miles north of Owen Brown also qualified as a High Accident Section (HAS) for 1983.

75% of the accidents in this section of U.S. Route 29 are intersection-related and 54% of the accidents in this section are at the intersection of U.S. Route 29 and Owen Brown Road.

Rear end and left turn collision types account for 63% of total accidents and 84% of intersection-related accidents in this section. Both rear end accidents at 105 acc/100 mvm and left turn accident at 50 acc/100 mvm were higher than our statewide expectations in these categories.

2. Owen Brown Road

This section of Owen Brown Road experienced a total of 46 reported accidents during the study period, exceeding the statewide average rate for roads of similar design in both 1981 and 1982. However, this sections' accident rate, even in its highest year, would not have met the criteria of a State High Accident Section.

Rear end accidents at 93 acc/100 mvm and left turn accidents at 51 acc/100 mvm were each approximately double their respective statewide average rates. Intersection-related accidents account for 48% of the total number in

this section, most of which occurred at the intersection of U.S. Route 29 and Owen Brown Road.

3. Little Patuxent Parkway

This section experienced a total of 57 reported accidents during the three-year period and realized an accident rate much higher than our statewide expectations for this type design. It would qualify as a High Accident Section if it were State maintained. The intersection of Little Patuxent Parkway at Governor Warfield Parkway is listed in the 1982 County Intersection Accident Experience Booklet as having a high number of accidents. Intersection-related accidents in fact, account for 68% of total accidents in this section. Predominant collision types for this area were angle, rear end, and fixed object.

Accidents in this section have increased dramatically during the study period. The variety of origins/destinations as well as recent office and retail development have generated sufficient traffic to cause congestion.

Other road sections in this study area are short in length and mainly supplement existing traffic movements. South Entrance between U.S. Route 29 and Little Patuxent Parkway is a major conduit for traffic with origins/destinations at Columbia Mall, Lake Kittamaqundi, Town Center, Howard County Hospital, Howard Community College and several of Columbia's Villages, as well as the recreational sites of South Entrance itself. Accidents for this section have increased each year of the study period with rear end types increasing at the greatest rate.

Accident rates for the Old Columbia Road section have remained constant during the study period with most occurring north of South Entrance. Old Columbia Road at the intersection of U.S. Route 29 serves as a northern approach to South Entrance by southbound U.S. Route 29 traffic. It also accommodates northbound traffic attempting to avoid backups at South Entrance.

South Entrance Road is a short connector branching off Old Columbia and extending to South Entrance Road south of Howard County Library (see Figure 4). Five of the eight accidents in this section were intersection-related.

Analysis

Grade separation at U.S. Route 29 and Owen Brown would reduce or eliminate rear end and left turn collision types. Without additional improvements, however, and with the retention of existing traffic movements at South Entrance Road it may be assumed that accidents and congestion mirroring increased traffic volumes would increase at the South Entrance.

Design standards make infeasible the construction of full interchanges with U.S. Route 29 at both Broken Land Parkway and Owen Brown Road. Thus any extension of Broken Land Parkway with an interchange at U.S. Route 29 should accommodate traffic patterns currently existing at the U.S. Route 29 and Owen Brown intersection. This alternative probably would result in the greatest reduction in accidents for the following reasons:

1. Northbound traffic on U.S. Route 29 with Columbia Town Center destinations would likely divert to an extension of Broken Land to Little Patuxent Parkway reducing accidents at South Entrance.

2. The at-grade intersection of U.S. Route 29 and Owen Brown Road would be removed, eliminating intersection-related accidents at that location.

It should be reiterated that Little Patuxent Parkway currently experiences a high accident rate and increased volumes of traffic on this roadway resulting from a Broken Land extension might lead to even higher accident rates in this section. However, if Broken Land Parkway is not extended, traffic with destinations at Town Center and Merriweather Post would continue to use South Entrance Road which is currently a High Accident Intersection.

In summary, although the Build Alternates would alleviate operational and design problems at specific locations, actual reductions in overall accident rates for the entire study area would be contingent on specific details of each design proposal.

III. ALTERNATES CONSIDERED

ble

III. ALTERNATES CONSIDERED

A. Alternates Presented at the Alternates Public Hearing

Four Build Alternates were presented at the Alternates Public Meeting. These were Alternates 2, 3, 4 and 5. Of these alternates, Alternates 2, 3, 5 were carried forward for further study however, options 2A and 2B of Alternate 2 and option A of Alternate 5 have been dropped from the interchange concepts. No preferred alternate or option has been selected at this time.

Of the original alternates, Alternate 4 was dropped from further study due to its inability to adequately accommodate the projected traffic volumes. Alternate 6 was added to the studies as a modification to Alternate 5 in response to comments received at and following the Alternates Public Meeting.

B. Alternates Considered and Dropped

1. Options 2A and 2B of Alternate 2

Option 2A proposed a ramp connection in the northwest quadrant of the interchange to accomplish the turn from southbound U.S. Route 29 to westbound Broken Land Parkway. The ramp proposed in Option 2A was projected to carry a small volume of traffic which did not justify the cost and floodplain impacts associated with construction across the Little Patuxent River. Option 2B proposed that this turn be provided by a left turn off the loop ramp in the southwest quadrant of the interchange. Both of these options have been dropped from the Alternate 2 interchange concept.

Option 2B, which proposed a left turn off the loop ramp in the southwest quadrant of the interchange, was dropped because it is incompatible with the high-capacity interchange concept.

In place of Options 2A and 2B, the turn from southbound U.S. Route 29 to Broken Land Parkway will be accomplished by the South Entrance Road and Symphony Woods Road.

2. Option 2A of Alternate 5

Option A of Alternate 5 proposed a left turn off the loop ramp in the northeast quadrant of the interchange onto eastbound Owen Brown Road. This option has been dropped and option B will be included in the Alternate 5 interchange. Option B proposes a directional ramp from northbound U.S. Route 29 to eastbound Owen Brown Road.

Option B can handle the expected traffic volumes more safely than Option A and with very little additional right-of-way required.

3. Alternate 4 - (Dropped from further study)

Alternate 4 proposed the extension of Broken Land Parkway from the east side of U.S. Route 29 at Stevens Forest Road to the west side of U.S. Route 29 at the proposed location of Hickory Ridge Road. This Alternate proposed an urban diamond interchange to provide access between U.S. Route 29 and Broken Land Parkway. This interchange provided for turning movements between U.S. Route 29 and Broken Land Parkway to be accommodated at, and controlled by, one high-capacity traffic signal. Traffic analysis indicates that this signal would operate at an

unacceptable level of traffic service and would not provide substantial improvement as compared to the existing intersection at Owen Brown Road and U.S. Route 29. It was for this reason that Alternate 4 was dropped.

C. Alternates for Detailed Studies

1. U.S. Route 29 - Widening

The widening of U.S. Route 29 from the existing four lanes to an ultimate (see Figure 25) width of six lanes is being studied in a concurrent, but separate Project Planning study. All the U.S. Route 29/Broken Land Parkway interchange concepts are compatible with the U.S. Route 29 widening. The widening is not an integral part of the construction of the proposed interchanges. The timing of the construction of the widening would be determined during the U.S. Route 29 Corridor Study which involves the study of capacity and safety improvements along U.S. Route 29 from I-495 to U.S. Route 40.

2. Alternate 1 - No Build

The No-Build Alternate would not provide for any long term improvements to the intersections along U.S. Route 29 at the South Entrance and at Owen Brown Road. It would include routine maintenance, short term capacity improvements and safety improvements to the existing intersections. The No-Build Alternate would not, however, provide for the anticipated increase in traffic volumes.

3. Alternate 2 (Figure 23)

Alternate 2 is the interchange concept originally proposed in 1965. It proposes construction of a full cloverleaf interchange with a directional ramp between U.S. Route 29 and westbound Broken Land Parkway Extended.

With this Alternate, Broken Land Parkway is proposed to be extended as a six lane divided roadway from (see Figure 24) the east side of U.S. Route 29 at Stevens Forest Road to the west side of U.S. Route 29 at the proposed intersection with Hickory Ridge Road. The proposed extension of Broken Land Parkway will tie into the North section of Broken Land Parkway between Hickory Ridge Road and Little Patuxent Parkway that is currently under construction by Howard Research and Development Corporation. At the south end of Broken Land Parkway Extended the existing connection of Owen Brown Road to Broken Land Parkway must be relocated to the south. Owen Brown Road is proposed to intersect Broken Land Parkway opposite the existing intersection at Stevens Forest Road.

The Alternate 2 interchange concept provides for three of four right turns between Broken Land Parkway and U.S. Route 29 to be made by uninterrupted ramp movements via Ramps A, C and G (see Figure 25). The right turn between southbound U.S. Route 29 and Broken Land Parkway would be accommodated by a right turn just north of South Entrance Road. Motorists would take South Entrance Road to proposed Symphony Woods Road which intersects Broken Land Parkway. Symphony Woods Road is proposed to be constructed by others as part of the development plan proposed for this area.

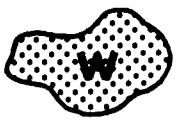
— Proposed Improvement

— Proposed Improvement to be Constructed by Others

— Proposed Structure

— Little Patuxent River 100 Year Flood Plain

— Air and Noise Receptors



— Wetlands

— Structure to be Taken by proposed Improvement

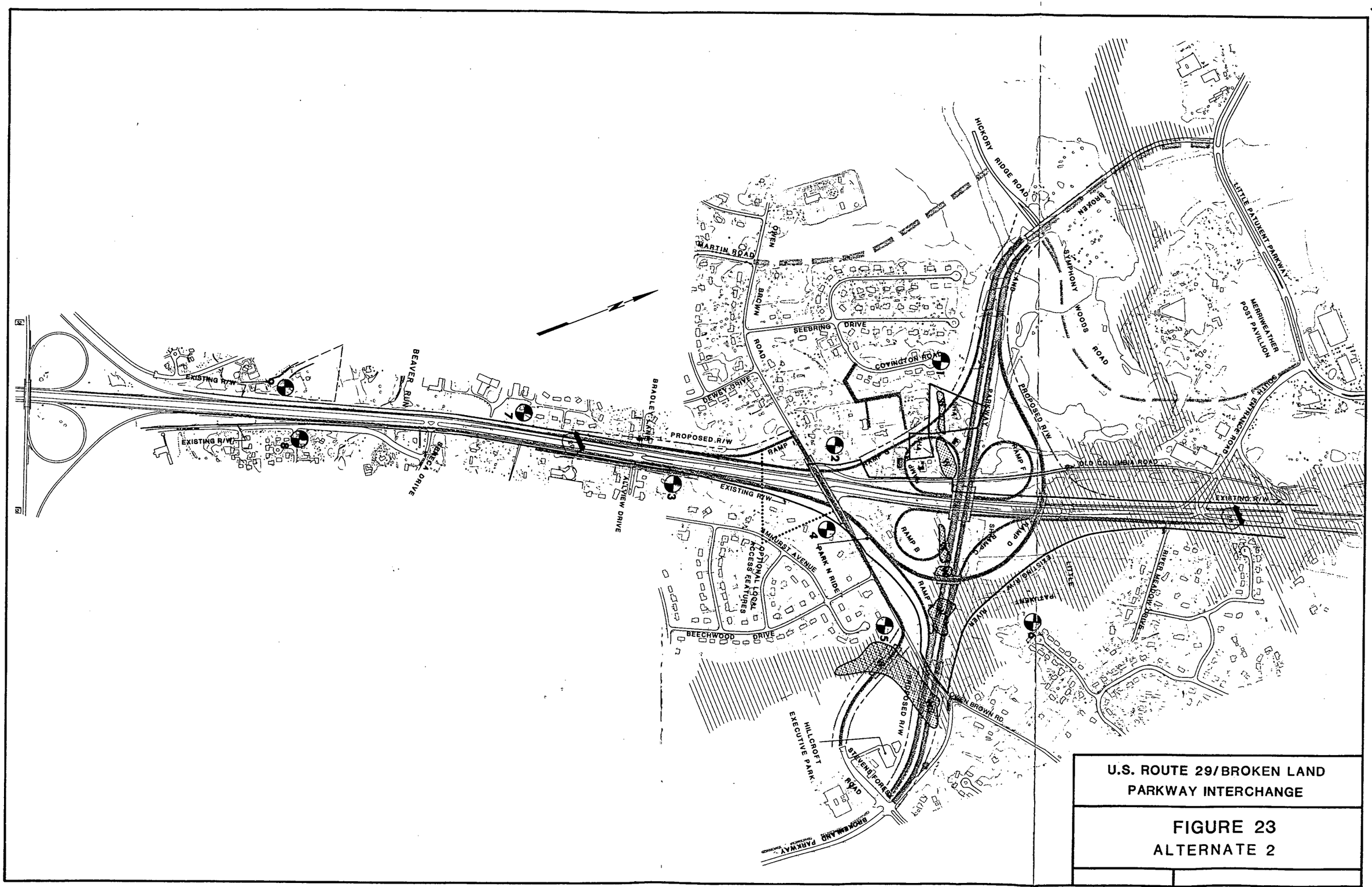
— Existing Right of Way

— Proposed Right of Way

— Historic Property Boundary

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

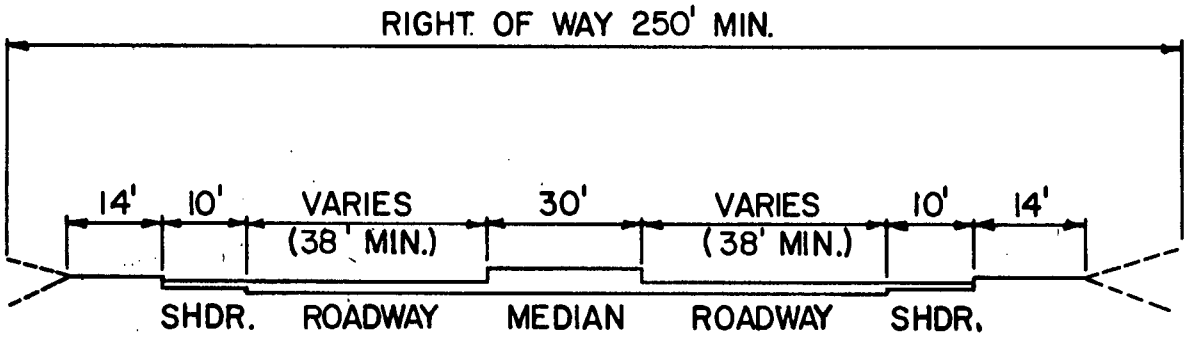
ALTERNATES LEGEND



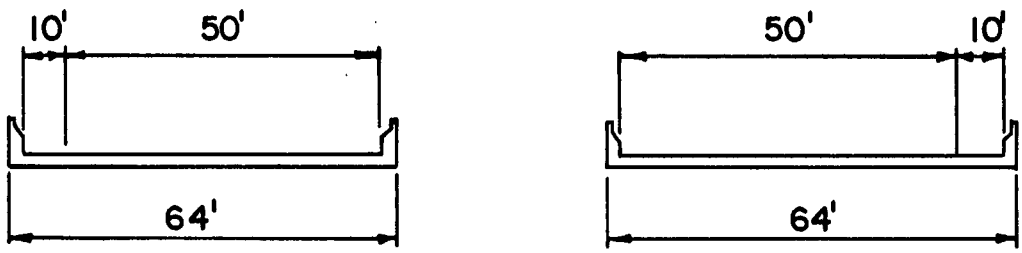
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 23
ALTERNATE 2

BROKEN LAND PARKWAY



ROADWAY TYPICAL SECTION
50 MPH



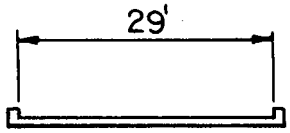
BRIDGE TYPICAL SECTION

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.

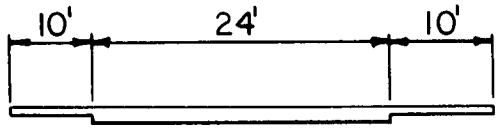
NOT TO SCALE

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

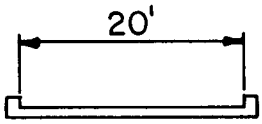
FIGURE 24
TYPICAL SECTIONS
ALTERNATES 2 & 3



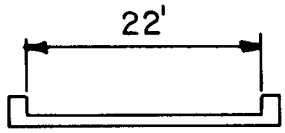
TWO-LANE RAMPS



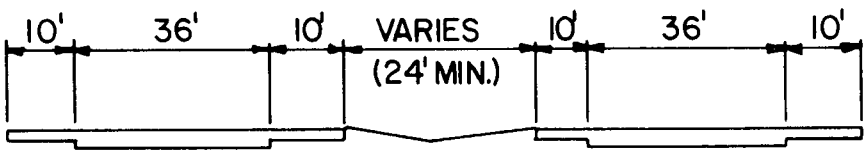
OWEN BROWN ROAD



SINGLE LANE RAMPS



LOOP RAMPS



ULTIMATE ON U.S. RTE. 29

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.

NOT TO SCALE

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 25
TYPICAL SECTIONS
ALTERNATES 2 & 3

The left turns between U.S. Route 29 and Broken Land Parkway would be provided by three loop ramps (Ramps B, F and H) and one two-lane directional ramp, Ramp D. The directional ramp would provide for the northbound U.S. Route 29 to westbound Broken Land Parkway turn which is the heaviest turning-traffic volume.

The South Entrance to Columbia Town Center would be modified with Alternate 2. The right turns from and to Southbound U.S. Route 29 will remain in their existing locations (modified with minor safety improvements) but the median crossover and existing signal are to be eliminated.

Two optional local access features are proposed with Alternate 2. The first is a local access ramp, Ramp I, which will provide access from Owen Brown Road to southbound U.S. Route 29. The second option is a bridge to carry Owen Brown Road across U.S. Route 29. If this option is not selected, Owen Brown Road would be terminated on each side of U.S. Route 29. These two options are independent of each other and no preference for either has been indicated at this time.

Access from and to U.S. Route 29 would be eliminated at River Meadow Drive, Allview Drive and Bradley Lane. Access to U.S. Route 29 from these streets would be provided via the existing internal street system. Houses along U.S. Route 29 near Allview Drive would be provided a relocated frontage road connection to Allview Drive. Alternate 2 would require that Owen Brown Road be terminated on the north side of Broken Land Parkway. Old Columbia Road must

also be terminated just to the north of the proposed interchange. Access to two residences that is currently provided by Old ColumbiaRoad will be replaced by an access road connecting to Covington Road.

Alternate 2 would require the construction of six retaining walls. Two retaining walls are required along Ramp D in the northeast quadrant of the interchange to protect the Little Patuxent River from the ramp supporting slopes. A retaining wall is required along Broken Land Parkway in the vicinity of Hillcroft Executive Park and two retaining walls are required along U.S. Route 29 at the Allview Drive Frontage Road. A retaining wall is required along the west side of U.S. Route 29 in the vicinity of the historic site to avoid taking property from the historic site.

3. Alternate 3 (Figure 26)

Alternate 3 proposes a partial cloverleaf interchange with a directional ramp between northbound U.S. Route 29 and westbound Broken Land Parkway Extended. As with Alternate 2, Broken Land Parkway would be extended from the south at Stevens Forest Road to the north at the intersection with Hickory Ridge Road. Broken Land Parkway is proposed to have the same typical section as with Alternate 2 (See Figure 25). The existing connection of Owen Brown Road, at the south end of Broken Land Parkway Extended, must be relocated to the south opposite the existing intersection with Stevens Forest Road.

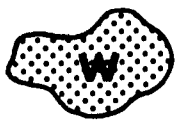
— Proposed Improvement

— Proposed Improvement to be Constructed by Others

— Proposed Structure

— Little Patuxent River 100 Year Flood Plain

— Air and Noise Receptors



— Wetlands

— Structure to be Taken by proposed Improvement

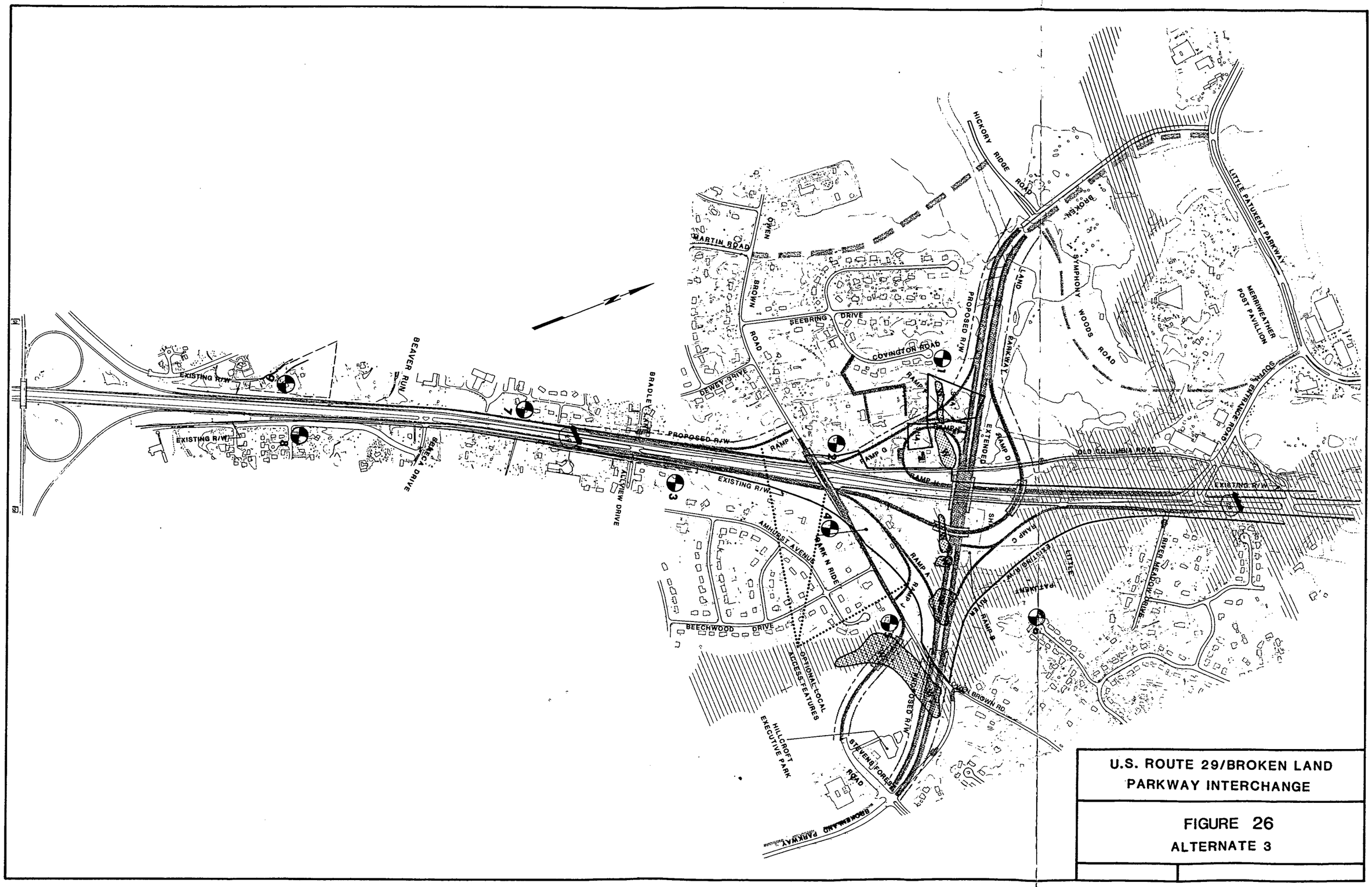
— Existing Right of Way

— Proposed Right of Way

— Historic Property Boundary

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

ALTERNATES LEGEND



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 26
ALTERNATE 3

Alternate 3 provides for three of the four right turns between U.S. Route 29 and Broken Land Parkway to be made by uninterrupted ramp movements via Ramps A, C and G. The southbound U.S. Route 29 to westbound Broken Land Parkway movement will be made via a left turn ramp off loop ramp H in the southwest quadrant of the interchange. This loop ramp also allows motorists to travel eastbound on Broken Land Parkway from southbound U.S. Route 29. Traffic from northbound U.S. Route 29 will enter westbound Broken Land Parkway via a two-lane directional ramp which is designed to handle the heavy traffic utilizing this ramp. The left turns from Broken Land Parkway to U.S. Route 29 will be made by a left turn off of Broken Land Parkway onto Ramps B and F which lead to U.S. Route 29. These left turns will require a traffic signal at each of the two turns and will be provided an exclusive turning lane in the median of the roadway.

The South Entrance to Columbia Town Center would be modified with Alternate 3 as it was with Alternate 2. The right turns from and to southbound U.S. Route 29 will remain intact and the median crossover and traffic signal will be removed.

Three optional local access features are proposed with Alternate 3. As with Alternate 2, Ramp I is proposed to provide access from Owen Brown Road to southbound U.S. Route 29. An additional ramp, Ramp J, is proposed to provide access from U.S. Route 29 northbound to Owen Brown Road. Finally, a bridge carrying Owen Brown Road over U.S. Route

29 is proposed as an option. If this section is not selected, Owen Brown Road would be terminated on each side of U.S. Route 29. Each of these three options are independent of each other and no preference for any has been indicated at this time.

Access to and from U.S. Route 29 would be eliminated at River Meadow Drive, Allview Drive and Bradley Lane. Access to U.S. Route 29 from these streets would be provided via the existing internal street system. Houses along U.S. Route 29 near Allview Drive would be provided with a relocated frontage road connection to Allview Drive. Alternate 3 would require that Owen Brown Road be terminated on the north side of Broken Land Parkway. Old Columbia Road must also be terminated just to the north of the proposed inter- change. Access to two residences that is currently provided by Old Columbia Road will be replaced by an access road connecting to Covington Road.

Alternate 3 would require the construction of four retaining walls. One retaining wall is required along Broken Land Parkway in the vicinity of the Hillcroft Executive Park and two along U.S. Route 29 at the Allview Drive frontage road. A retaining wall is also required along the west side of U.S. Route 29 in the vicinity of the historic site to avoid property acquisition from the site.

4. Alternate 5 (Figure 27)

Alternate 5 proposes the construction of a partial cloverleaf interchange at the juncture of U.S. Route 29 and Owen Brown Road. This alternate would require a bridge to

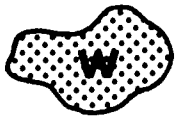
— Proposed Improvement

— Proposed Improvement to be Constructed by Others

— Proposed Structure

— Little Patuxent River 100 Year Flood Plain

— Air and Noise Receptors



— Wetlands

— Structure to be Taken by proposed Improvement

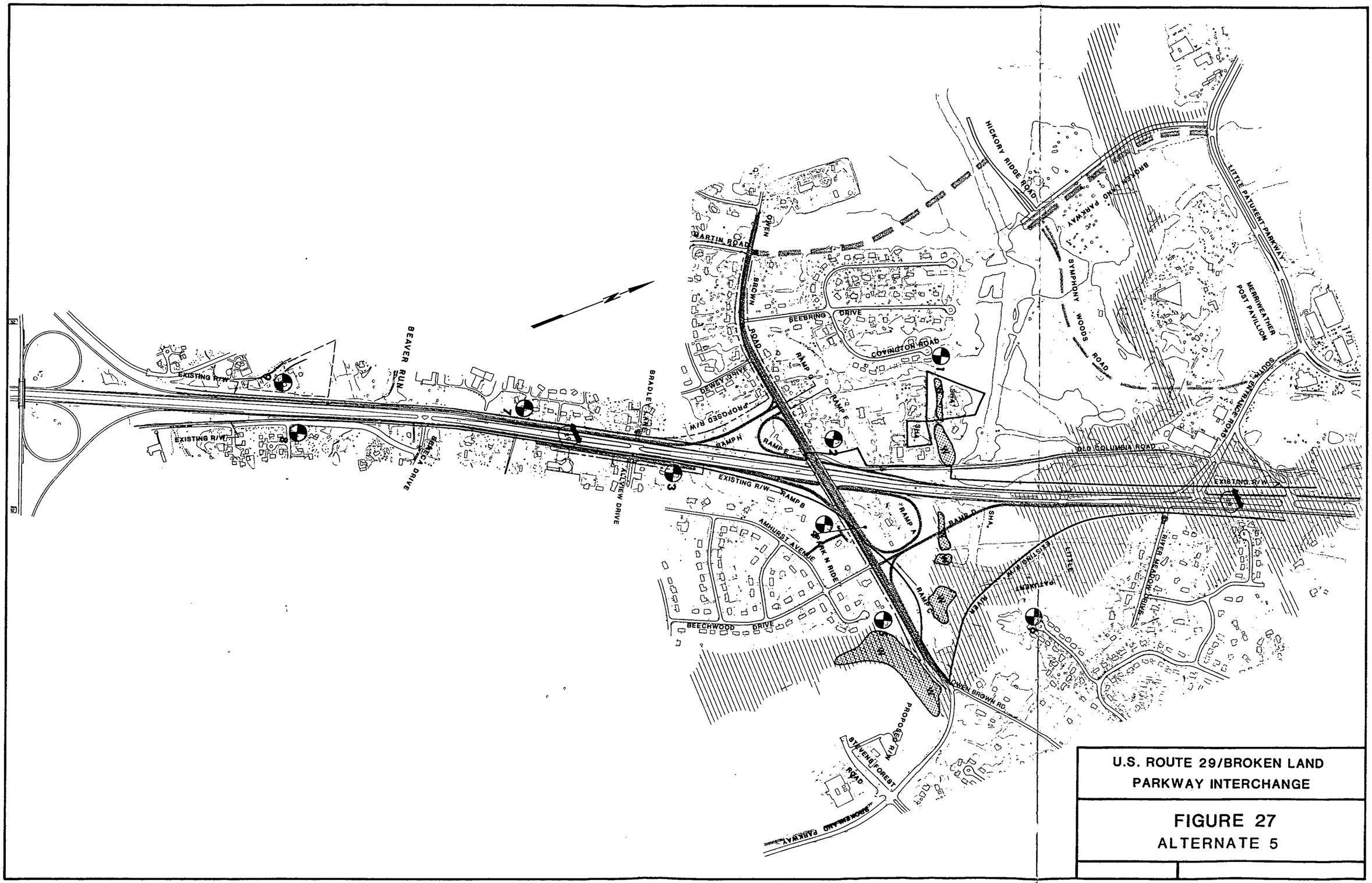
— Existing Right of Way

— Proposed Right of Way

— Historic Property Boundary

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

ALTERNATES LEGEND



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

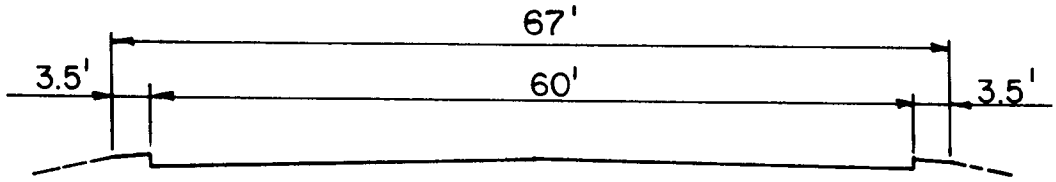
FIGURE 27
ALTERNATE 5

be constructed on Owen Brown Road which would span U.S. Route 29. Owen Brown Road would be reconstructed as a 5 lane roadway through the interchange area between Beechwood Road and Dewey Drive. This five lane section would provide two lanes in each direction plus a center left turn storage lane from Owen Brown Road to Ramps D and H (See Figure 28). These movements as well as left turns from the inner loop ramps would be signal controlled.

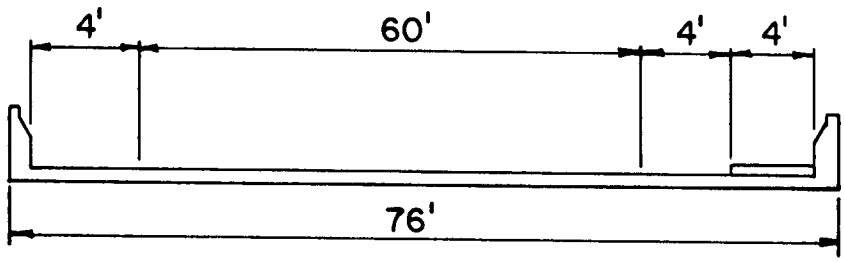
In the northeast quadrant, Ramp D would carry traffic from Owen Brown Road to northbound U.S. Route 29. Loop Ramp A would provide access from northbound U.S. Route 29 to westbound Owen Brown Road. Access from northbound U.S. Route 29 to eastbound Owen Brown Road would be via Ramp B in the southeast quadrant. In the southwest quadrant loop Ramp E accommodates traffic exiting southbound U.S. Route 29 onto both east and westbound Owen Brown Road. Ramp H in this quadrant provides access from Owen Brown Road to southbound U.S. Route 29.

South Entrance Road to Columbia Town Center would remain operational as it is today.

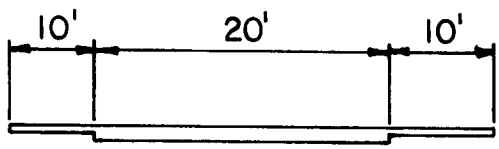
Direct access to and from U.S. Route 29 at River Meadow Drive, Allview Drive and Bradley Lane would be terminated. Access to U.S. Route 29 from these local streets would be provided via the existing internal street system. Access to houses along U.S. Route 29 near Allview Drive would continue to be provided by the existing frontage road connection to Allview Drive. Alternate 5 would also require a cul-de-sac on Old Columbia Road just north of Owen Brown Road. Access



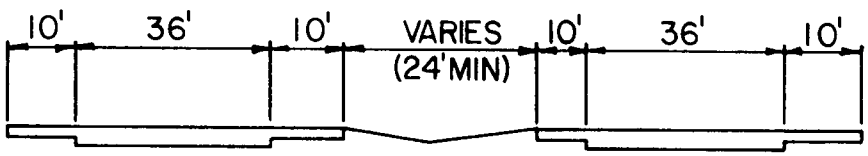
OWEN BROWN ROAD



OWEN BROWN ROAD BRIDGE



SINGLE LANE RAMPS



ULTIMATE ON U.S. RTE 29

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.

NOT TO SCALE

U.S. ROUTE 29/ BROKEN LAND PARKWAY INTERCHANGE

FIGURE 28
TYPICAL SECTIONS
ALTERNATES 5 & 6

to two houses on Owen Brown Road located just east of U.S. Route 29 would be provided by a relocated driveway exiting onto Amhurst Avenue.

Alternate 5 would require the construction of four retaining walls; two along northbound U.S. Route 29 in the vicinity of the Allview Drive frontage road and one between southbound U.S. Route 29 and Ramp E. A fourth retaining wall would be required along the west of U.S. Route 29 in the vicinity of the historic site.

5. Alternate 6 (Figure 29)

This alternate was developed after the Alternates Public Meeting held in April, 1985.

Alternate 6 is a modified cloverleaf interchange utilizing a directional fly-over ramp from northbound U.S. Route 29 to westbound Broken Land Parkway. This alternate would require the construction of two bridges; one for Owen Brown Road over U.S. Route 29 and one for Broken Land Parkway over U.S. Route 29. Owen Brown Road would be a 5 lane roadway as with Alternate 5 (see Figure 28). Two through travel lanes and a center lane for left turns would be provided.

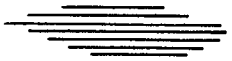
In the southeast quadrant, Ramp K would carry northbound U.S. Route 29 traffic to westbound Broken Land Parkway. Motorists would use Ramp B to travel eastbound on Owen Brown Road and Ramp A to travel westbound on Owen Brown Road.

A collector/distributor (C/D) roadway would be provided for southbound U.S. Route 29 from south of the South

— Proposed Improvement

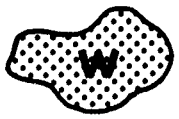
— Proposed Improvement to be Constructed by Others

— Proposed Structure



— Little Patuxent River 100 Year Flood Plain

— Air and Noise Receptors



— Wetlands

— Structure to be Taken by proposed Improvement

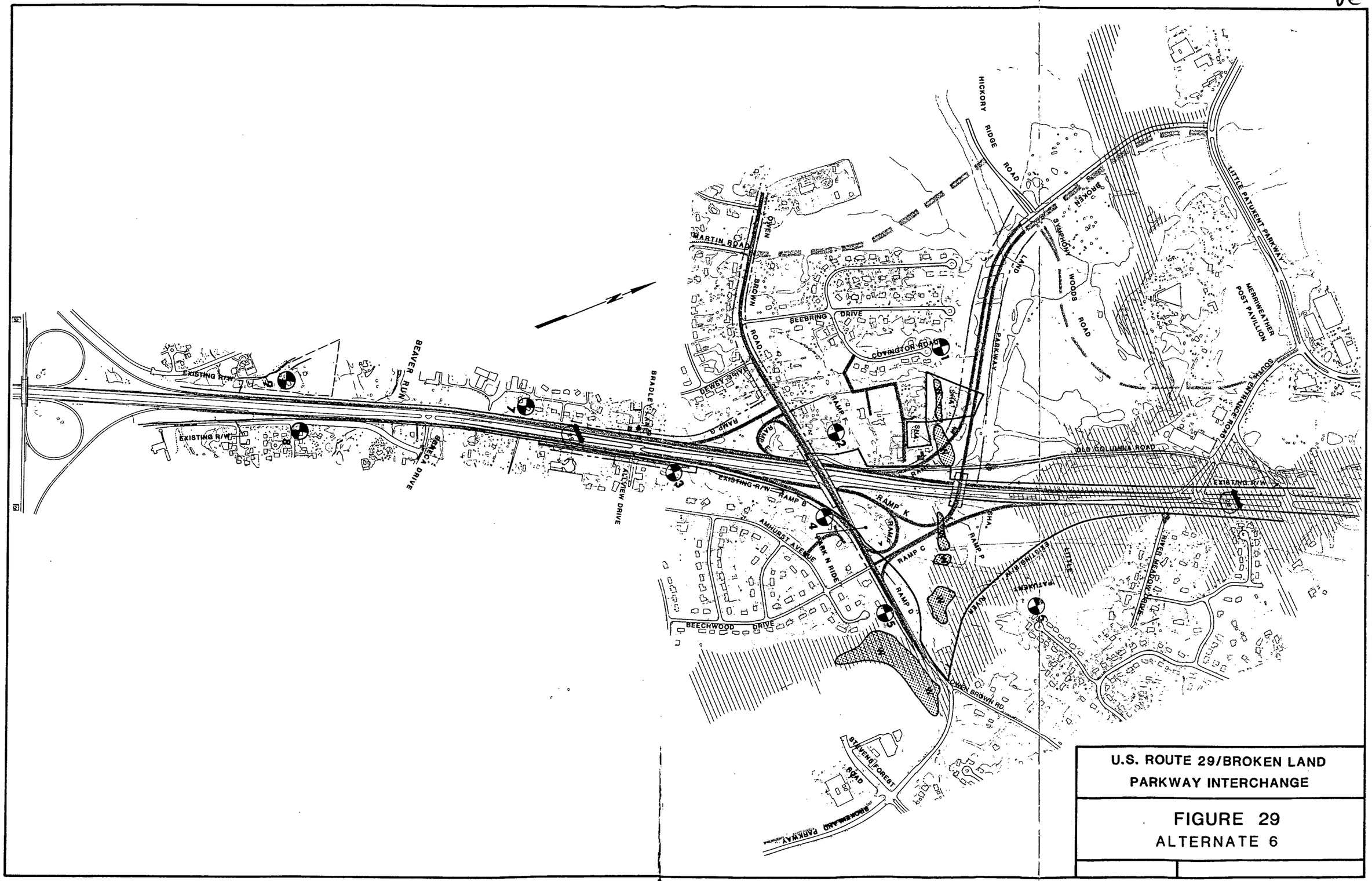
— Existing Right of Way

— Proposed Right of Way

— Historic Property Boundary

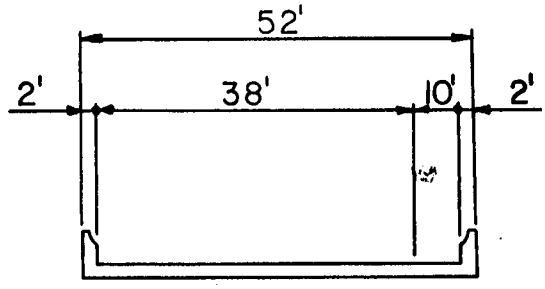
U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

ALTERNATES LEGEND



U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 29
ALTERNATE 6



BROKEN LAND PARKWAY BRIDGE
TYPICAL SECTION - ALT. 6

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.

NOT TO SCALE

U.S. ROUTE 29/BROKEN LAND PARKWAY INTERCHANGE

FIGURE 30
TYPICAL SECTION
ALTERNATE 6

Entrance Road to south of Bradley Lane. In the southwest quadrant of the interchange motorists would exit from the C/D road to Owen Brown Road in either the easterly or westerly direction. Ramp G would allow motorists on Owen Brown Road access to U.S. Route 29 southbound via the C/D roadway.

Ramp L in the northwest quadrant would allow traffic from southbound Broken Land Parkway to travel south on U.S. Route 29 via the C/D roadway. Southbound traffic on BrokenLand Parkway would use the C/D road to exit to Owen Brown Road east or westbound. The South Entrance to Columbia Town Center would remain operational at all times as it exists today.

In the northeast quadrant of the interchange Ramp C would provide access to either U.S. Route 29 northbound or to Broken Land Parkway westbound to the Columbia Town Center.

Access to and from U.S. Route 29 would be eliminated at Allview Drive, Bradley Lane and River Meadow Drive. Access to these streets would then be via the existing internal street system. Access to the houses along the U.S. Route 29 near Allview Drive would be provided by a connection to the exiting frontage road. Access to two houses on Owen Brown Road just east of U.S. Route 29 would be provided by a relocated driveway exiting onto Amhurst Avenue. A cul-de-sac will be constructed on Old Columbia Road just north of Broken Land Parkway. Access to several residences and the Natures Way Childrens Center will be provided by an access road connecting to Covington Road.

Alternate 6 would require the construction of three retaining walls. Two retaining walls would be required along northbound U.S. Route 29 in the vicinity of the Allview Drive frontage road. A retaining wall would be required along the west side of U.S. Route 29 in the vicinity of the historic site.

IV. ENVIRONMENTAL IMPACTS

IV. ENVIRONMENTAL IMPACTS

A. Social and Economic Impacts

1. Relocation

The No-Build Alternate and Alternate 5 would require no relocations. Alternates 2 and 3 each would displace three (3) residences and one (1) business, a day care center which is minority owned and operated. Alternate 6 would displace four (4) residences, three of which are the same as required by Alternates 2 and 3. None of the displacees are minority members.

A summary of the local real estate market revealed that comparable, affordable replacement housing is available for those displaced. All families will be relocated in decent, safe, and sanitary housing within their financial means. Residences will be relocated in accordance with the requirements of the "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970." (See Appendix). A lead time of twelve (12) months would be required for the relocations under Alternate 2, 3 and 6.

Replacement sites for Nature's Way Children Center may be more difficult to locate. However, under Howard County Zoning regulations, day care centers may be granted special exception in any District, provided that all State and County regulations and requirements are met.

No handicapped or elderly persons are expected to be displaced under any of the Build Alternates. There would be no impacts to schools, churches, or park or recreational areas by the proposed improvements.

The pedestrian crosswalk over U.S. Route 29 would be maintained. The Park and Ride lot located just east of U.S. Route 29, would be removed by Alternates 2, 5 and 6, but relocated elsewhere.

TITLE VI STATEMENT

It is the policy of the Maryland State Highway Administration to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964, and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, sex, national origin, age religion, physical or mental handicap in all State Highway Administration program projects funded in whole or in part by the Federal Highway Administration. The State Highway Administration will not discriminate in highway planning, highway design, highway construction, the acquisition of right-of-way, or the provision of relocation advisory assistance.

This policy has been incorporated into all levels of the highway planning process in order that proper consideration may be given to the social, economic, and environmental effects of all highway projects. Alleged discriminatory actions should be addressed to the Equal Opportunity Section of the Maryland State Highway Administration for investigation.

2. Access to Community Facilities and Services

The No-Build Alternate would not address the existing traffic congestion at the intersection of U.S. Route 29 and Owen Brown Road, nor would it address the projected increase of traffic volumes for the area. Consequently, access to residences, businesses and local facilities and services would become increasingly difficult and time comsuming.

All Four (4) Build Alternates would alleviate the congestion and potential traffic hazards at the Owen Brown Road/U.S. Route 29 intersection, but Alternates 2, 3 and 6 would better accommodate traffic movements to residential and commercial areas as well as essential facilities and services provided the bridge option is selected or the

county constructs Martin Road Extended. Alternates 2, 3 and 6 would also separate Merriweather Post Pavillion event traffic from local and through traffic by channelization to proposed side roads at lower speeds. Unlike Alternates 2, 3 and 6, Alternate 5 would not adequately accommodate event traffic or facilitate travel to and from Columbia New Town.

All four build alternates would deny access between U.S. Route 29 and River Meadow Drive, Bradley Lane and Allview Drive making travel more circuitous in these areas.

This proposed action could also adversely impact neighborhoods in the areas of River Meadow Drive, Bradley Lane and Allview Drive by limiting accessibility for emergency vehicles.

Alternates 2 and 3 include a cul-de-sac on Owen Brown Road in front of the Julia Brown Montessori School providing safer access to and from the school area, and also considers the option to cul-de-sac or bridge Owen Brown Road at U.S. Route 29. If the bridge option is not selected, access for residents to either side would be less direct but safer.

If the bridge option is not selected and the county does not construct the extention of Martin Road to Hickory Ridge Road, the accessibility of the Village of Hickory Ridge may be adversely impacted. Access would be by way of Cedar Lane from either Maryland Route 32 or U.S. Route 29. Response times for emergency services may be increased and the length and duration of commuter and other trips by residents would be correspondingly increased.

3. Community and Economic Impacts

Alternates 2, 3 and 6 would not only provide for quicker and safer commuting to jobs, schools, shops and services but would also serve planned commercial and industrial growth. These improvements would also facilitate the transportation of supplies and goods in and out of the study area and the Columbia business district.

None of the Build Alternates would disrupt the integrity or cohesion of the communities, however some areas would be affected by the proposed improvements. Alternates 5 and 6 would negatively impact residents fronting Owen Brown Road between Amhurst Avenue and Martin Road because of proximity effects and traffic increase due to the five-lane widening and usage of Owen Brown Road as an alternate route providing access into Columbia.

Residents fronting Stevens Forest Road would be negatively impacted due to increased traffic created by the proposed cul-de-sac of River Meadows Drive by all the Build Alternates and the proposed cul-de-sac of Owen Brown Road by Alternates 2 and 3. However, Alternates 2 and 3 would benefit residents in the southeast quadrant of the study area by shifting through traffic further north, away from the residential area.

Alternates 2, 3 and 6 would remove the existing Old Columbia Road, requiring relocation of driveways for two residential properties adjacent to Old Columbia Road and Covington Road.

4. Land Use Impacts

The No-Build Alternate is not consistent with Howard County's goals for providing an adequate transportation system for present and planned development. Failure to improve the transportation system along the U.S. Route 29 Corridor could result in development pressures to the western and central portions of the county designated for rural conservation.

Since the county has designated the study area, as well as most of the eastern region for intense commercial, industrial and residential development; improved road capacity and accessibility would be consistent with the comprehensive development plans adopted for the area. The existing at-grade intersection at U.S. Route 29 and Owen Brown Road experiences considerable difficulty in handling high volumes of through and turning traffic generated by development in the Columbia area.

All Build Alternates are consistent with the General Land Use Plan.

B. Historic and Cultural Impacts

No property is required from Athol (HO 37), nor are any adverse impacts to the site anticipated. Concurrence with this assessment has been requested from the Maryland Historical Trust.

C. Natural Environmental Impacts

1. Floodplains

All of the proposed build alternates will encroach upon the 100 year floodplain of the Little Patuxent River.

Placement of any fill material within the 100 year floodplain will require a Section 404 Permit from the Army Corps of Engineers. A comparison of the amounts of acreage within the 100 year floodplain required for each improvement is shown below:

ALTERNATE	FLOODPLAIN ACREAGE REQUIRED
Alternate 2	20.3
Alternate 3	13.0
Alternate 5	1.0
Alternate 6	1.0

In accordance with the requirements of FHPM 6-7-3-2, each encroachment was evaluated to determine its 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 provide a community's only evacuation route.
- A significant risk, or
- A significant adverse impact on natural and beneficial floodplain values.

A preliminary analysis of the proposed floodplain encroachments indicates that Alternates 5 and 6 would not significantly affect upstream water surface elevations or storage capacity. Alternate 2 has the most severe floodplain impact, raising water surface elevations approximately 0.5 feet and possibly requiring the purchase of flood easement. Alternate 3 significantly reduces floodplain impacts as compared to Alternate 2 but may still require the purchase of a lesser amount of flood easement. Additional detailed studies will continue through the design phase of

the project. All floodplain encroachments, will be coordinated with the appropriate Federal, State and Local agencies.

The use of standard hydraulic design techniques for all waterway openings would incorporate structures to limit upstream flood level increases and approximate existingdownstream flow rates.

Use of state-of-the-art sediment and erosion control techniques and stormwater management controls will minimize risks and impacts to the beneficial floodplain values. None of the proposed floodplain encroachments would directly or indirectly support further development within the floodplain. A floodplain finding, if required, will be presented in the final environmental document.

2. Prime Farmland Soils

The project would affect Prime Farmland Soils under all Build Alternates proposed. There is no indication of any unique farmland soils within the study area. Approximate amounts of Prime Farmland Soils required for right-of-way purposes are shown below:

Alternate 2 - 15.7 acres

Alternate 3 - 15.7 acres

Alternate 5 - 14.2 acres

Alternate 6 - 14.2 acres

Within the study area zoning is predominantly commercial and residential, consistent with planning goals for eastern Howard County. There are no active farms within the study area.

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

3. Surface Water

The Little Patuxent River and its tributaries provide drainage for the entire study area. Alternates 2 and 3 propose bridging the river at two locations in the easternportion of the interchange for construction of Broken Land Parkway and Owen Brown Road. The interchanges proposed for Alternates 2 and 3 would also require two new crossings of an unnamed tributary of the Little Patuxent with either pipes or culverts as well as extending two existing structures for widening of U.S. Route 29. Approximately 700' of stream relocation of this unnamed tributary will also be required for construction of Alternates 2 and 3.

Alternates 5 and 6 will require widening the existing U.S. Route 29 bridge over Little Patuxent River north of the proposed interchange. The alternates will also require extension of an existing structure for an unnamed tributary of the Little Patuxent flowing under U.S. Route 29. Two new stream crossings of the same tributary will be required for construction of interchange ramps.

All Build Alternates cross Beaver Run. No extension of the existing culvert or disturbance of the streambed is anticipated.

The increase of impervious surfaces resulting from the proposed improvements would produce a proportionate increase in the amount of roadway runoff carrying vehicle generated pollutants (i.e., oil, coolants, brake linings, rubber,

etc.). 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.

The final design for the proposed improvements will include plans for grading, sediment and erosion control, and stormwater management, in accordance with State and Federal laws and regulations. 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). Waterway construction permits will also be required from the Department of Natural Resources.

4. Habitat

Both terrestrial and aquatic habitats would be affected by the proposed action. The alternates under consideration would require the following amounts of woodland and wetland habitat for right-of-way:

	WOODLAND	WETLANDS (non-tidal)
Alternate 2	35.05	1.55
Alternate 3	28.39	1.45
Alternate 5	7.5	0.1
Alternate 6	7.5	0.1

a.) Terrestrial

Species such as deer, rabbit, squirrel, racoon, dove, waterfowl, reptiles, amphibians, and fish are representative of the wildlife populations in the study area. Coordination with DNR, Wildlife Administration, and U.S. Fish and Wildlife 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 would be accompanied by a proportional loss in animal population inhabiting these areas. According to the Horward County Master Plan, this area is zoned for residential and commercial development.

b.) Aquatic

Pursuant to Executive Order 11990, Protection of Wetlands, wetland areas potentially affected were identified. Potential impacts resulting from construction of the proposed roadway include sedimentation, pollution by roadway runoff, and loss of vegetative cover. No tidal wetlands 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 Figure 7). Efforts were made to minimize impacts to non-tidal wetlands. However, due to the interchange design configurations necessary to provide desired circulation and roadway connections and the proximity of the floodplain of the Little Patuxent River, avoidance of all non-tidal wetlands was not feasible.

D. 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: 35PPM (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 meterological conditions for the No-Build Alternate and the Build Alternates 2, 3, 5, and 6 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 U.S. Route 29/Broken Land Parkway Air Quality Analysis which is available for review at the Maryland State Highway Administraion, 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 meterological conditions, the background CO concentrations

are considered in addition to the levels directly attributable to the facility under consideration. Background CO levels were projected based upon on-site monitoring conducted at Fort George G. Meade during the period of February, 1977. 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	3.6	2.0
2015	3.5	1.9

Traffic Data, Emission Factors, and Speeds

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

The composite emission factors used in the analysis were derived from the Environmental Protection Agency (EPA) Compilation of Air Pollutant Emission Factors: Highway Mobile Sources, and the Modification to MOBILE 2 which were used by EPA to Respond to Congressional Inquires on the Clean Air Act, and were calculated using the EPA MOBILE 2.5 computer program. An ambient air temperature of 20° F was assumed in calculating the emission factors for both the 1 hour and 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.

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 10 to 55 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 assumed.

The wind directions utilized as part of the analysis were rotated to maximize CO concentrations at each receptor location. Wind directions varied for each receptor and were selected through a systematic scan of 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. Nine (9) receptor sites were chosen for this analysis consisting of nine (9) residences. The receptor site locations were verified during study area visits by the analysis team. The receptor sites are shown on Figures 23, 26, 27, and 29.

Site No.	Description Location
1	Residence, 2 story frame Covington Road.
2	Residence, 2 story brick and frame Owen Brown Road
3	Residence, 2 story brick and frame U.S. Route 29
4	Residence, 2 story frame Owen Brown Road
5	Residence, 2 story brick and frame Amhurst Avenue
6	Residence, 2 story brick and frame Babylon Crest
7	Chell Road, one story single family frame and brick residence
8	Bushranger Path, split level single family frame residence
9	Martin Road, two story single family stone residence (historic)

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 Tables 6 and 7. 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 Tables 6 and 7 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.

TABLE 6

CO CONCENTRATIONS* AT EACH RECEPTOR SITE, PPM

1995

Receptors	No-Build		Alternate 2		Alternate 3		Alternate 5		Alternate 6	
	1 Hr.	8 Hr.	1 Hr.	8 Hr.	1 Hr.	8 Hr.	1 Hr.	8 Hr.	1 Hr.	8 Hr
1	4.2	2.3	5.0	2.9	5.0	3.1	4.5	2.6	4.5	2.5
2	5.5	3.4	5.4	2.9	5.5	3.1	5.6	3.5	5.9	3.6
3	6.4	3.8	6.3	3.7	6.8	3.6	6.3	3.8	6.5	3.7
4	5.9	3.3	6.0	3.4	6.0	3.5	5.9	3.9	5.7	3.2
5	6.1	3.9	5.4	3.0	5.2	3.0	5.8	3.8	8.5	5.8
6	4.6	2.7	5.3	3.1	5.1	3.0	4.9	2.8	4.8	2.8
7	6.2	3.8	6.4	3.8	6.4	3.8	6.4	3.8	6.4	3.8
8	5.4	3.0	5.7	3.2	5.7	3.2	5.7	3.2	5.7	3.2
9	5.6	3.4	5.8	3.1	5.8	3.1	5.8	3.1	5.8	3.1

*Including Background Concentrations
The S/NAAQS for CO: 1 Hr. Maximum = 35 PPM
8 Hr. Maximum = 9 PPM

TABLE 7

CO CONCENTRATIONS* AT EACH RECEPTOR SITE, PPM

2015

Receptors	No-Build		Alternate 2		Alternate 3		Alternate 5		Alternate 6	
	1 Hr.	8 Hr.	1 Hr.	8 Hr.	1 Hr.	8 Hr.	1 Hr.	8 Hr.	1 Hr.	8 Hr
1	4.8	2.5	5.2	3.3	5.3	3.3	4.9	2.6	4.5	2.5
2	8.3	4.0	5.5	3.4	5.9	3.5	6.5	4.2	6.8	4.4
3	8.5	4.7	7.8	4.7	7.8	4.6	7.6	4.6	8.2	4.7
4	7.7	4.2	6.1	3.8	6.2	3.9	6.8	4.3	6.1	3.7
5	10.9	5.0	5.4	3.4	5.6	3.4	6.8	4.4	8.6	7.0
6	5.7	3.1	6.0	3.5	5.3	3.0	5.5	3.2	5.3	3.2
7	8.5	4.7	7.7	4.8	7.7	4.8	7.7	4.8	7.7	4.8
8	6.9	3.7	6.6	3.9	6.6	3.9	6.6	3.9	6.6	3.9
9	7.3	4.0	6.6	4.0	6.6	4.0	6.6	4.0	6.6	4.0

*Including Background Concentrations
The S/NAAQS for CO: 1 Hr. Maximum = 35 PPM
8 Hr. Maximum = 9 PPM

Alternates 2 and 3 tend to result in the highest CO concentrations in 1995 for most receptors while the No-Build Alternate tends to result in the highest CO concentrations in 2015. The concentrations remain well below the S/NAAQS for all Alternates under consideration.

In conclusion, the No-Build Alternate and Build Alternates will not result in violations of the 1 hour or 8 hour S/NAAQS 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 specifies 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 originates 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 and comment.

E. Noise Levels and Noise Impacts

1. Prediction and Analysis Methodology

The method used to predict the future noise levels in the U.S. Route 29/Broken Land Parkway 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

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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.

The prediction calculations were performed utilizing a computer program adaptation of the FHWA MODEL, STAMINA 2.0/Optima.

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/activity relationship (See table 5, page I-10) 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, practically 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

Table 8

PROJECT NOISE LEVELS

NSA	DESCRIPTION	AMBIENT L_{EQ}	DESIGN YEAR [2015] L_{EQ}				
			No Build	Alt. 2	Alt. 3	Alt. 5	Alt. 6
1	Residential	57	54	62	62	55	60
2	Residential	66	66	67	67	66	67
3	Residential	65	70	70	70	70	70
4	Residential	63	64	66	65	66	66
5	Residential	61	57	62	61	62	62
6	Residential	58	52	58	57	54	54
7	Residential	62	70	70	70	70	70
8	Residential	65	70	70	70	70	70
9	Historic	58	67	67	67	67	67

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 cost-effectiveness is $40,000 per residence. This is an average cost figure based on current and projected barrier costs by the Maryland State Highway Administration.

2. Prediction Results

All nine (9) noise sensitive areas (NSA) are associated with the No-Build Alternate and each Build Alternate. The predicted Leq noise levels would vary -6 to +9 dBA from present noise levels (See Table 8).

None of the noise sensitive areas would experience an increase in noise levels in excess of 10 dBA but Leq noise levels at noise sensitive areas 3, 7 and 8 will exceed the noise abatement criteria of 67 dBA for all Build Alternates. Based on the criteria discussed in the previous section, noise abatement should be considered for noise sensitive areas 3, 7 and 8 for all Build Alternates.

NSA 3

A noise barrier on the east side of U.S. Route 29 in the vicinity of noise sensitive area 3 would be feasible but not reasonable. A twelve foot barrier 1900 feet long would reduce noise levels at five first row houses and a church by

a maximum of 6 to 7 dBA at a cost of $524,400 or $66,000 per residence. The church is air conditioned and will not exceed the interior noise abatement criteria. Therefore, noise mitigation is not recommended at this location.

NSA 7

A noise barrier on the west side of U.S. Route 29 in the vicinity of noise sensitive area 7 would be feasible but not reasonable. A twelve foot barrier 2300 feet long would reduce the noise levels at ten to twelve first row houses by a maximum of 6 to 7 dBA at a cost of $635,000 or $53,000 per house for Alternate 5, $58,000 per house for Alternates 2 and 3, and $64,000 for Alternate 6. Therefore, noise mitigation is not recommended at this location.

NSA 8

A noise barrier on the east side of U.S. Route 29 in the vicinity of noise sensitive area 8 would be feasible and reasonable. A twelve foot barrier 1100 feet long, extending from the end of the existing earth berm, would reduce noise levels at ten first and second row houses by 5 to 10 dBA at a cost of $304,000 or $30,000 per house for all Build Alternates. Therefore, noise mitigation will be studied during the design phase.

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 Farth 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 probably would not occur during critical sleep or outdoor recreation periods.

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

V. COMMENTS AND COORDINATION

V. COMMENTS AND COORDINATION

Four (4) Build Alternates were developed and presented at the April 25, 1985 Alternates Public Meeting. Approximately 130 people attended the meeting. The majority of the comments at this meeting supported the need for an interchange and indicated preferences for Alternates 2 or 3.

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.

This project was discussed at the Quarterly Interagency Project Review Meeting held April 19, 1984.

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

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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 16, 1984

Mr. Louis H. Ege
Bureau of Project Planning
State Highway Administration
707 North Calvert Street
Baltimore, MD 21203

Subject: U.S. Route 29 at Broken Lands Parkway
Contract No. HO 630-101-770

Dear Mr. Ege:

The Natural Heritage Program's data base contains no record of rare species, unusual community or other significant natural feature in the vicinity of this project as delineated in your transmittal of August 10, 1984. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Arnold Norden

Arnold W. Norden
Md. Natural Heritage Program

AWN:mcs

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DEPARTMENT OF NATURAL RESOURCES
Maryland Forest, Park & Wildlife Service
TAWES OFFICE BUILDING
ANNAPOLIS, MARYLAND 21401

TORREY C. BROWN, M.D.
SECRETARY

DONALD E. MacLAUCHLAN
DIRECTOR

August 28, 1984

Mr. Louis H. Ege, Jr.
State Highway Administration
P.O. Box 717/707 N. Calvert Street
Baltimore, Maryland 21203-0717

Dear Mr. Ege:

There are no known populations of listed threatened or endangered species within the area of project influence for the proposed new interchange of U.S. Route 29 at Broken Land Parkway, as described to me in your letter of August 10, 1984.

Sincerely,

Gary J. Taylor
Nongame & Endangered
Species Program Manager

GJT:ba
cc: Carlo Brunori

Telephone (301) 827-8612
TTY FOR DEAF: STATEWIDE 1-800-492-5062; BALTIMORE 269-2609

DEPARTMENT OF NATURAL RESOURCES
Maryland Forest, Park & Wildlife Service
TORREY C. BROWN M.D.
SECRETARY
September 16, 1984
ANNAPOLIS, MARYLAND

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

Dear Ms. Simpson:

This responds to your August 9 and 10 requests for information on the presence of Federally listed endangered or threatened species within the area of the following projects:

PDMS No. 015078-MD Route 36, Allegany County
PDMS No. 132053-05 Route 29, Howard County

Except for occasional transient individuals, no Federally listed, proposed or candidate endangered or threatened species are known to exist in the project impact area. Therefore, no biological assessment or further Section 7 Consultation is required with the Fish and Wildlife Service (FWS). Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

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

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

Sincerely yours,

A. Moser
for Glenn Kinser
Supervisor
Annapolis Field Office

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TORREY C. BROWN M.D.
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JOHN R. GRIFFIN
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KENNETH N. WEAVER
DIRECTOR
MARYLAND GEOLOGICAL SURVEY

EMERY T. CLEAVES
DEPUTY DIRECTOR

Division of Archeology
338-7236

8 October 1985

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

RE: US 29/Brokenland Parkway
Howard County

Dear Mr. Ege:

On 30 September 1985, I conducted an archeological survey of the subject project. Essentially 12 tracts of land were examined, giving roughly 60% coverage for the project area. The 12 tracts, keyed to the attached map, are described below.

Tract 1. Ongoing construction is taking place, and disturbance by heavy machinery is extensive.

Tract 2. This is a grass/gravel parking lot for Merriweather Post Pavilion. One rhyolite flake was recovered; examination of numerous exposures at this location revealed broken pieces of quartz, but none could be confidently identified as being culturally modified. Hence, the rhyolite flake is viewed as an isolated artifact and, as such, is not significant.

Tract 3. Broken quartz was again observed in this grass parking area. However no definite flakes were found, and it is likely that the quartz has been fractured through crushing by automobile traffic.

Tract 4. This is the largest of three Merriweather parking lots examined; extensive portions are graveled. No artifacts were noted in less disturbed areas or around the edges of this lot.

Tract 5. Again, ongoing construction has extensively disturbed this area.

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Tract 6. A cleared area beneath a powerline was examined with negative results.

Tract 7. Situated on a spur between the Little Patuxent River and one of its tributaries, this tract was considered to possess at least moderate potential for prehistoric resources. The excavation of several shovel test pits in this wooded/grassy area failed to reveal any artifacts. As with elsewhere, broken and/or tabular quartz was observed, but none appeared cultural.

Tract 8. This tract was examined with reference to an historic farmstead shown on the 1878 Howard County atlas. The area has been developed as a gas station and office complex, and no trace of the historic site remains.

Tract 9. Grading on the north side of Owen Brown Road has extensively disturbed this tract.

Tract 10. A park-and-ride lot now exists at this location.

Tract 11. This area is very low and at the time of this survey exhibited evidence of extensive flooding associated with Hurricane Gloria. In addition to being too low for likely sites, some evidence of disturbance was also noted here.

Tract 12. Extensive grading has disturbed this location.

In summary, no archeological sites were noted in the project area. Much of the area is disturbed, and even undisturbed areas are characterized by generally only low to moderate archeological potential. As a result, no additional archeological study of the project is warranted. If I can be of further assistance, please let me know.

Sincerely,

Dennis C. Curry
Archeologist

DCC:lw

cc: Cynthia Simpson
Rita Suffness

Attachment

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Maryland Historical Trust

November 18, 1985

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: Contract No. HO 630-101-770
P.D.M.S. No. 132053
U.S. Rt. 29 at Brokenland Pkwy.
Howard County, Maryland

Dear Mr. Ege:

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

Sincerely,

Richard B. Hughes

Richard B. Hughes
State Administrator
of Archeology

RBH/BCB/bjs

cc: Mrs. Mary Louise Gramkow
Mr. Ed Shull
Ms. Rita Suffness
Mr. Tyler Bastian

Shaw House, 21 State Circle, Annapolis, Maryland 21401 (301)269-2212, 269-2438
Department of Economic and Community Development

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Richard W. Shaw
Acting Fire Administrator

Fire Department

GEORGE HOWARD BUILDING
3430 COURT HOUSE DRIVE
ELLICOTT CITY, MARYLAND 21043
992-2311
TTY-992-2323

MEMORANDUM

TO: Doug Ermer, Project Manager
State Highway Administration

FROM: Commander Edgar G. Shilling
Fire Prevention Officer

DATE: December 17, 1985

SUBJECT: Evaluation of Response Times
Owen Brown Road and U.S. Route
29 Area

Howard County Fire Station 7, located on Banneker Road at Little Patuxent Parkway is the primary response station.

Howard County Fire Station 9, located in Long Reach, is the secondary response station.

Alternate #2: This alternate would not significantly change response times for Allview Estates as long as ingress and egress is maintained at Allview Drive. If this access were not maintained, response times to Allview would be increased significantly, unless Martin Road were extended to Hickory Ridge, and the Owen Brown Road bridge constructed over Route 29. There would be no significant change to the Hickory Ridge area. Response times would be improved if Martin Road were extended to Hickory Ridge. The optional local access feature would improve secondary response of the Long Reach station. Response times southbound on Route 29 and eastbound on Broken Land Parkway would be significantly improved to areas adjacent to these routes.

Alternate #3: This would have the same basic effect as Alternate #2.

Alternate #5: This would have little or no impact.

Alternate #6: This would improve response times to all areas, except those served by eastbound Broken Land Parkway.

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It appears that Alternates 2, 3, and 6 would improve our response capability, Alternate 5 would have no impact.

EGS/rmw

cc: Richard W. Shaw
Acting Fire Administrator
Thomas Harris, OP&Z
Amar Bandel, OP&Z
Edward Stollof, OP&Z

COLONEL PAUL H. RAPPAPORT
CHIEF OF POLICE

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DEPARTMENT OF POLICE FOR HOWARD COUNTY

3410 COURT HOUSE DRIVE, ELLICOTT CITY, MD. 21043
992-2200

December 31, 1985

Mr. Doug Ermer, Project Manager
Maryland Department of Transportation
State Highway Administration
707 North Calvert Street
Baltimore, Maryland 21203

Dear Mr. Ermer:

I have reviewed the interchange study of U.S. Route 29 in the vicinity of Owen Brown Road, specifically to determine the impact of any of the proposed alternates on police response time.

Proposed Alternates #5 and #6 have no negative impact on police response time or access to surrounding communities.

Alternate Proposals #2 and #3 probably will increase response time minimally from Route 29, but decrease response times from one side of Columbia to the other. This increase in response time could be properly addressed by including "local access" features at Owen Brown Road if either proposal #2 or #3 is selected.

I should point out that the short notice precludes any in-depth study of response times or an on-site inspection. Therefore, my preceding comments reflect only generalized observations of the impact of your project.

Thank you for the opportunity to comment on the proposed changes while still in the planning stages. Assuring you of my continued cooperation in matters of mutual concern, I remain

Sincerely,

Colonel Paul H. Rappaport
Chief of Police

PHR/PNH/dmc

cc: S.O.D.

VI. APPENDICES

BIBLIOGRAPHY

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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.

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 displacment.

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.