



THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

MCPB  
Item No. 13  
3-7-02

March 1, 2002

**MEMORANDUM**

TO: Montgomery County Planning Board

VIA: Richard C. Hawthorne, Chief *RCH*  
Transportation Planning  
County-wide Planning Division

Daniel K. Hardy, Supervisor *DKH*  
Transportation Planning  
County-wide Planning Division

Khalid Afzal, Team Leader *KA*  
Georgia Avenue Team  
Community-Based Planning Division

FROM: Shahriar Etemadi: 301-495-2168 for the Park and Planning Department  
Transportation Planning *DKH for*  
County-wide Planning Division

SUBJECT: MD 97/Randolph Road  
Intersection Improvement Study Recommendation  
(Project MO854B11)

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**RECOMMENDATION: Transmit the following comments to the Maryland State Highway Administration:**

1. The Planning Board supports Alternate "C" (Randolph Road under Georgia Avenue) for the grade-separated interchange as the preferred alternate for this study.
2. During final design, the Maryland State Highway Administration (SHA) should investigate the following refinements to Alternate "C":
  - Shift the alignment of the portion of Randolph Road east of Georgia Avenue to the south to avoid impacts to the Glenmont Shopping Center pad sites.

- Improve pedestrian accessibility and safety at the MD 97/Randolph Road ramps by re-evaluating the channelized right-turn lanes and reducing curb radii where possible.
- Improve pedestrian safety and urban design by evaluating changes to the typical cross-section along MD 97 and Randolph Road that provide a wider median for pedestrian refuge at the intersection, ensure a landscape panel, increase sidewalk widths, and consider extension of the Glenmont Greenway south of Randolph Road
- Consider removal of those portions of the sidewalk on the west side of Georgia Avenue where the sidewalk function can be provided by the Glenmont Greenway.

## **MEMORANDUM ORGANIZATION**

This memorandum contains the following sections:

- Purpose of briefing
- Previous Planning Board actions
- Alternates description and rationale for staff's recommendation
- Design elements requiring further consideration
- Public involvement and comment
- Alternates comparison

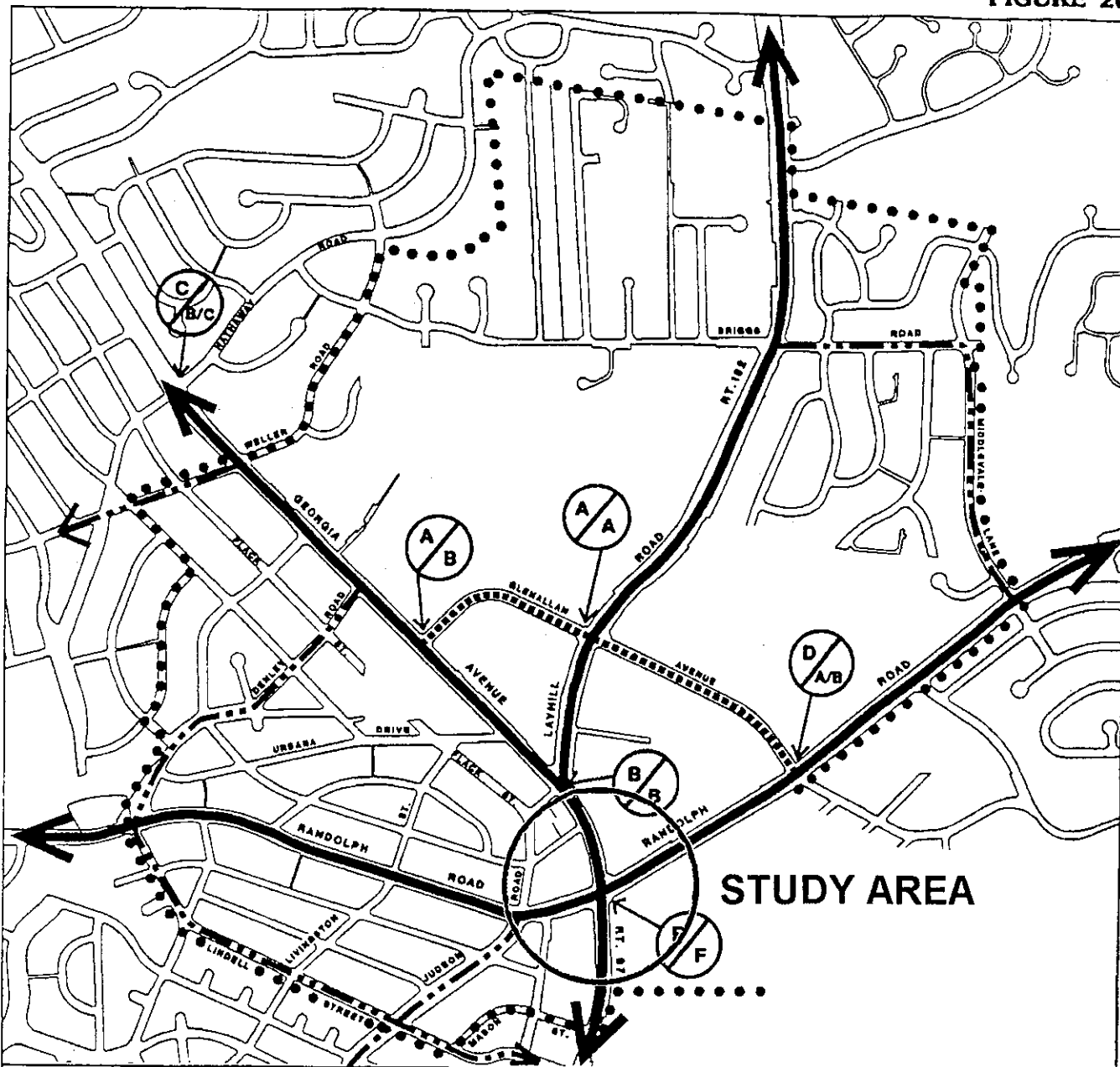
## **PURPOSE OF BRIEFING**

The purpose of this briefing is to present to and solicit comments from the Planning Board regarding the preferred alternate for the MD 97/Randolph Road Intersection Improvement Study. The study location is shown in Exhibit 1. An Environmental Resource Inventory was completed by SHA and was summarized in a brochure prepared for the December 12, 2001 Location and Design Public Hearing. This brochure is attached to the copies of this memo provided to Planning Board members.

The Planning Board recommendations on a preferred alternate will be considered in the SHA alternate selection process. The Planning Board comments will also inform the County Council's Transportation and Environment (T&E) Committee March 11 worksession. The T&E Committee will also consider testimony received at the County Council's March 7 Public Hearing.

# VEHICULAR TRAFFIC CIRCULATION

FIGURE 20




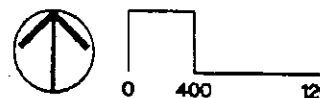
- • • • • SECTOR PLAN BOUNDARY
- MAJOR HIGHWAYS
- ..... ARTERIAL ROAD
- - - - - PRIMARY ROADS
-  EXISTING LEVEL OF SERVICE

Exhibit 1



After SHA identifies a selected alternate, location and design approval must be obtained from the Federal Highway Administration. Following that decision, the project will enter the final design process, during which SHA will return to the Planning Board for a mandatory referral.

#### **PREVIOUS PLANNING BOARD ACTIONS:**

The Planning Board has taken no prior action on this project planning study. The Planning Board and County Council supported a grade-separated interchange at this location in the 1997 Approved and Adopted Sector Plan for the Glenmont Transit Impact Area and Vicinity. The Sector Plan recommends that SHA *“construct a grade separation at Georgia Avenue/Randolph Road...to address an existing congestion problem at this intersection. The benefits from this improvement include:*

- *Reduced congestion at the critical intersection*
- *Improved flow of through traffic on both Randolph Road and Georgia Avenue*
- *Reduced incentives for neighborhood cut-through traffic, since travel time on Georgia Avenue would be improved*
- *Capacity to support development of the Village Center.”*

#### **ALTERNATES DESCRIPTION AND RATIONALE FOR STAFF RECOMMENDATION**

Five alternates were documented in the environmental resources inventory and presented to the public at the December 12, 2001 Location and Design Hearing:

- No-Build
- Alternate “B”, Split-Level Interchange
- Alternate “C”, Randolph Road under Georgia Avenue
- Alternate “D”, MD 97 Under Randolph Road
- Alternate “E”, At-Grade improvements

These alternates are shown in Attachments A through E. Further descriptions of these alternates and comparison of their environmental effects are provided in the last section of this memorandum.

#### **Rationale for Staff Recommendation**

The development of the staff recommendation in support of Alternate “C” is based on the following logic:

- The No-Build Alternate does not address the need to provide additional transportation capacity to support Sector Plan development.
- Alternate “E” (an expanded at-grade intersection) provides a design unacceptable from pedestrian accessibility and urban design perspectives, and is inconsistent with the Sector Plan.

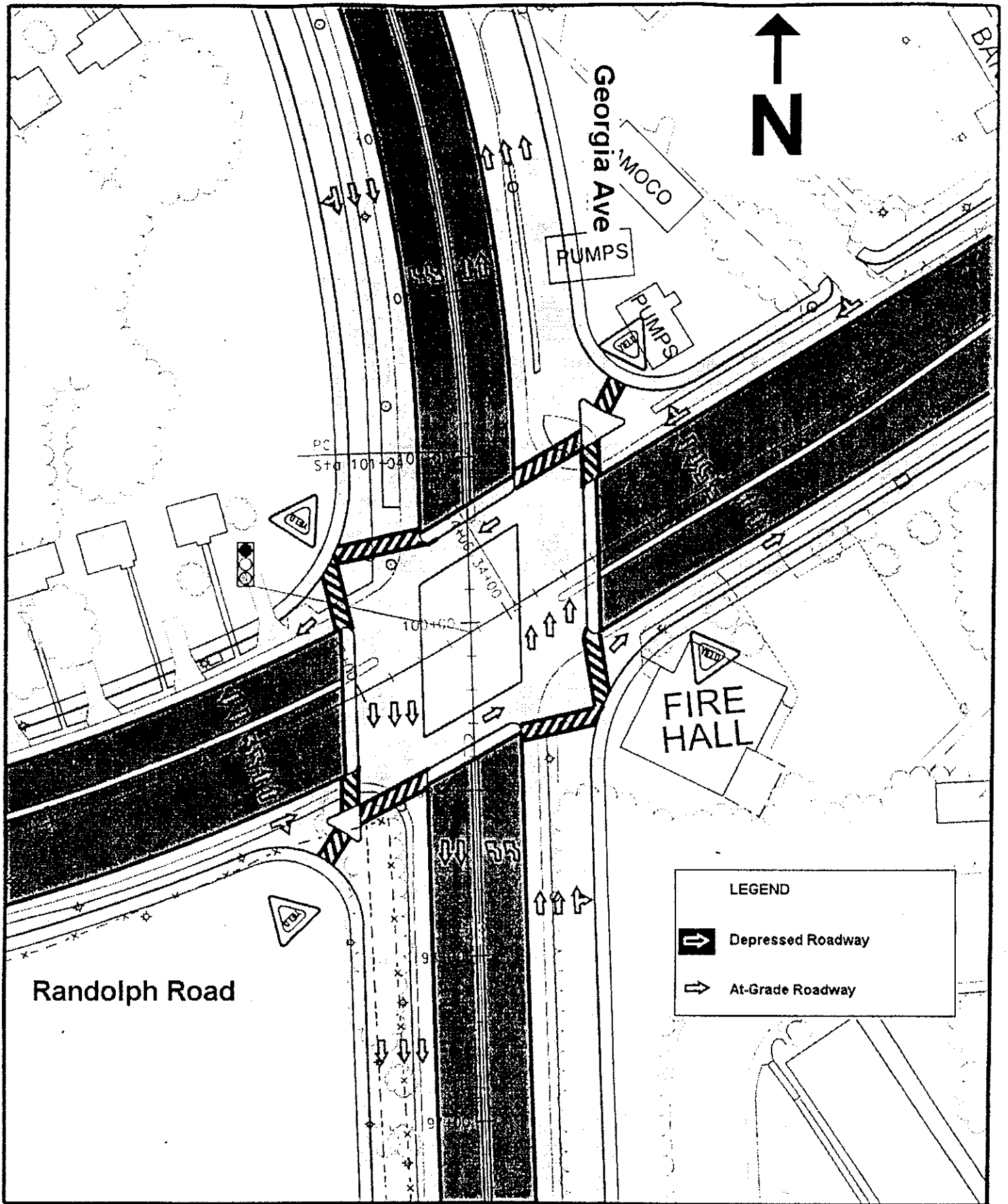
- Alternate "D" (MD 97 under Randolph Road) also provides a design unacceptable from pedestrian accessibility and urban design perspectives.

The two remaining interchange alternates, Alternate "B" and Alternate "C", meet SHA Purpose and Need and provide the greatest consistency with the objectives of the Sector Plan. Alternate "C" is preferred because it:

- Provides better vehicular circulation, particularly to and from local businesses and for traffic destined to Layhill Road (MD 182)
- Better fits the "lay of the land", as depressing Randolph Road below Georgia Avenue (a "ridge" road) reduces the slope of the vertical grade on Randolph Road.
- Results in a less disruptive design, with only two "trenches" created by depressing Randolph Road, as opposed to the four trenches created by depressing both roadways in Alternate "B"
- Requires less right-of-way acquisition and affects fewer properties (as currently designed)
- Costs approximately \$10 million less (as currently designed)

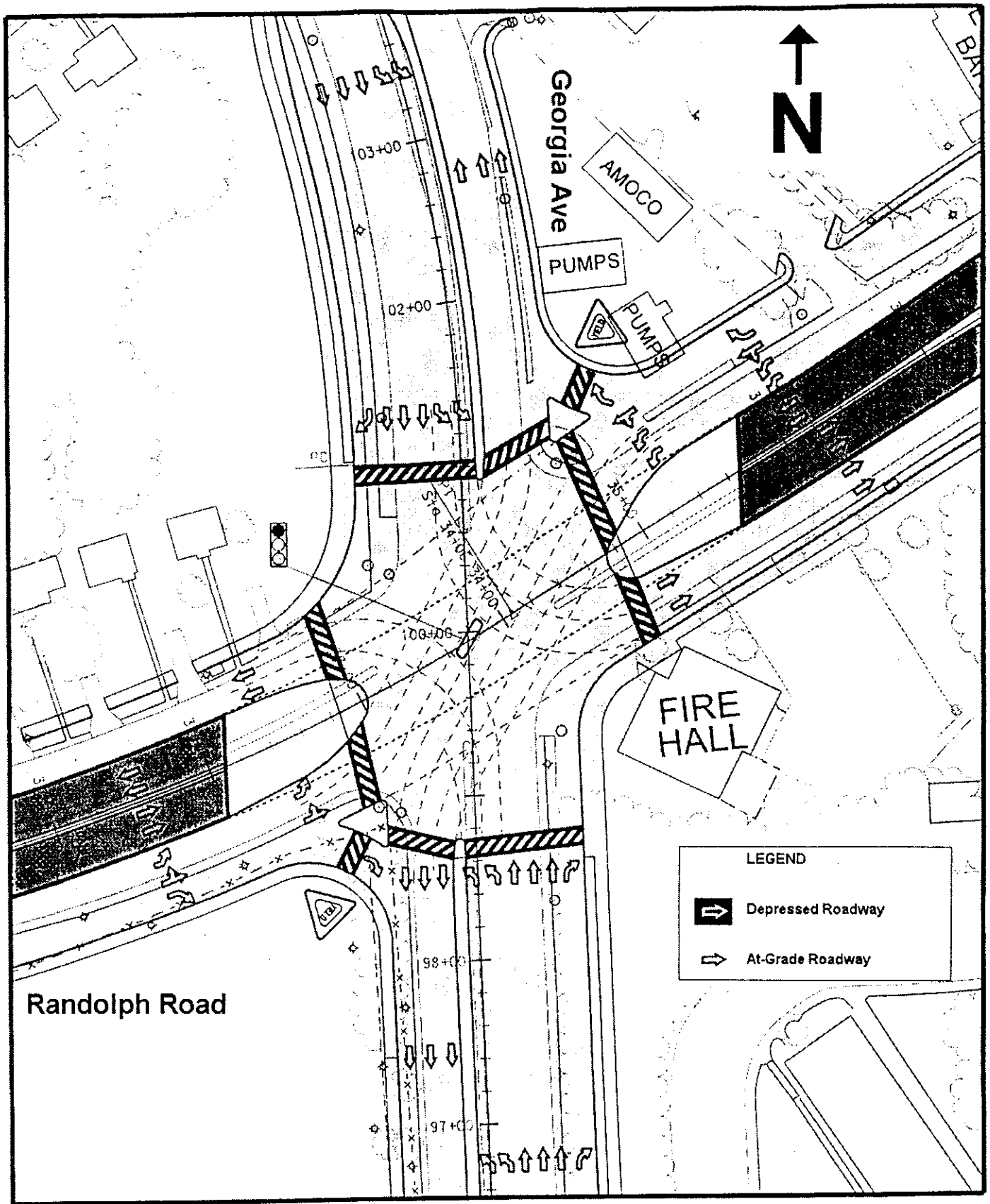
The primary drawback to choosing Alternate "C" over Alternate "B" is that, as currently designed, Alternate "B" provides a better pedestrian crossing of both Georgia Avenue and Randolph Road. Exhibits 2 and 3 provide close-up views of the at-grade portion of the Georgia Avenue/Randolph Road intersection for Alternate "B" and Alternate "C", respectively. Comparison of Exhibits 2 and 3 demonstrates that Alternate "B" provides shorter crosswalk lengths and wider median refuges than Alternate "C".

Staff recommends that, due to the intersection's proximity to the Glenmont Metrorail Station, the intersection design must emphasize pedestrian safety and access. Staff recommends that achieving this pedestrian emphasis, even at the expense of additional property impacts and capital costs, is worthwhile. The \$10 million difference in capital cost between Alternates "B" and "C" should not be viewed simply as a budget for pedestrian enhancements, but may provide a useful benchmark as the costs of improving pedestrian safety for Alternate "C" are evaluated. Staff therefore recommends SHA consider revisions to several design elements during project engineering to improve the pedestrian experience, as described below.



**FIGURE 4**  
**ALTERNATE 'B'**

Exhibit 2



**FIGURE 6**  
**ALTERNATE 'C'**

Exhibit 3

## **DESIGN ELEMENTS REQUIRING FURTHER CONSIDERATION**

Staff recommends that the current design of Alternate "C" proposed by SHA should be refined to enhance the safety and aesthetic quality for pedestrians and bicyclists. As stated in the Sector Plan, the design of this intersection must recognize that pedestrian access at this location is vital to the residents and businesses in the Glenmont area, and required to facilitate access to the Glenmont Metrorail station. The plan should provide for safe, convenient, and clearly identified pedestrian crossings of Georgia Avenue and Randolph Road with sufficient refuge area and adequate crossing time for pedestrians.

Therefore, staff recommends that SHA consider the following design changes as part of final design for Alternate "C":

### **Randolph Road Alignment Shift**

Staff endorses a proposal developed in response to Public Hearing comments to shift the alignment of Randolph Road slightly to the south on the east side of Georgia Avenue. This alignment shift would avoid impacts to the Glenmont Shopping Center businesses that currently front Randolph Road. This shift would require more property from the fire station and police station on the south side of Randolph Road. However, the County is seeking to relocate the fire station, and the police station is functionally obsolete. Staff believes that the site, now housing both facilities, could be reconfigured to house only the rebuilt police station with the Randolph Road alignment shift. Further coordination between SHA and County agencies is required during final design to investigate funding and phasing opportunities.

### **Channelized Right Turn Lanes**

Georgia Avenue and Randolph Road meet at a slightly skewed angle, resulting in acute angle right turns in the northeast and southwest quadrants. As indicated in Exhibit 3, Alternate "C" channelizes these right turns, resulting in a "pork chop" island. (This characteristic, incidentally, also applies to Alternate "B".) The pedestrian connection between the island and the adjacent curb requires pedestrians to cross traffic that is controlled only by a yield sign. The curb radius in these quadrants will allow traffic to move at speeds higher than desirable from a pedestrian perspective. Staff recommends that three approaches be reviewed during detailed design -- removal of the "pork chop" island, reconfiguration of the channelization to promote slower travel speeds, or signalization of the right-turn movement.

### **Median and Landscape Panel Widths**

The proposed typical cross-section for Alternate "C", shown in Attachment C, includes an eight-foot median on Georgia Avenue at the Randolph Road intersection, landscape panels varying from zero feet to six feet in width, and sidewalks and bike paths varying from five feet to eight feet in width.



During detailed design, SHA should identify the impacts associated with providing:

- a ten-foot median
- a consistent seven-foot landscape panel
- a consistent eight-foot sidewalk or bike path

Site-specific treatments should be developed to address both pedestrian safety and urban design concerns. One such treatment, an exception to the rule applied to the Glenmont Greenway, is described below. An urban streetscape approach (paving within the landscape panel and using planters or boxes for landscaping) may be appropriate. Regardless of cost, the outside edge of the sidewalk should always be a minimum of eight feet from the curb to allow three feet for utilities or signposts and a five-foot sidewalk.

Operational analysis of the pedestrian signal phasing is required to determine the adequacy of the eight-foot median width on Georgia Avenue. Because Alternate "C" employs "split" phasing for Randolph Road, pedestrians will likely be required to cross Georgia Avenue in two separate signal phases. The median refuge area must be designed to safely and comfortably accommodate future pedestrian volumes.

The Sector Plan recommends extending the Glenmont Greenway along the west side of Georgia Avenue from Randolph Road south to Mason Street. The capital cost, and impact on the Glenmont Elementary School site, of incorporating the Greenway into this project should be documented.

Staff commends SHA for the solutions recently implemented in the improvements at Four Corners intersection of Colesville Road (US 29) and University Boulevard (MD 193). These solutions required site-specific design treatments to achieve safety and urban design objectives within a limited right-of-way. Similar treatments should be applied in Glenmont.

### **Glenmont Greenway Serving as Sidewalk**

Alternate "C" proposes to include a sidewalk in the roadway right-of-way along the west side of Georgia Avenue parallel to the Glenmont Greenway. Staff finds that the Glenmont Greenway can function adequately both as an open space amenity and a pedestrian path, so that a parallel sidewalk is not required. SHA should examine the need for what appears to be redundant pedestrian paths and remove any redundancy from the design.

### **PUBLIC INVOLVEMENT AND COMMENT**

SHA formed a focus group at the beginning of this project planning process. Representatives of nearby communities, businesses, and state and local agencies have met periodically throughout the study.

The Location and Design Public Hearing was held on December 12, 2001. The purpose of the public hearing was to formally present the results of the engineering and environmental studies that have been completed for the MD 97/Randolph Road intersection improvement study.

One hundred ten people attended the public hearing. SHA received 17 comments during public testimony and one comment made during private testimony at the public hearing. SHA received an additional 14 written comments as of February 1, 2002. The testimony can be summarized as follows:

Comments supporting a particular alternate or project in general:

No-Build	5
Alternate B	3
Alternate C	5
Alternate D	2
Alternate E	1

Suggestions:

For sidewalks/bike paths/lanes	12
At-grade intersection improvements	5
Concerns with access to Shopping Center	11
Support displacement of firehouse/police	4
Against displacement of firehouse/police	2

## **ALTERNATES COMPARISON**

Exhibit 4 provides a quantitative comparison of environmental impacts and estimated capital costs. Exhibit 5 provides a qualitative summary of the degree to which each of the alternates meets Purpose and Need objectives. Each alternate is described below.

### **No Build Alternate**

The No Build Alternate would provide no significant improvements at this intersection. Traffic congestion is forecast to significantly worsen by 2020, affecting intersection operations for vehicles and pedestrians.

The intersection of MD 97 (Georgia Avenue) and Randolph is currently operating at Level of Service (LOS) F during peak periods resulting in severe congestion and delays. Travel demand forecasts indicate that these conditions will worsen by 2020 when traffic on MD 97 will increase by 91% and traffic on Randolph Road will increase by 53%. This alternate results in poor levels of service, with a forecast 2020 volume-to-capacity (V/C) ratio of 1.50

**Table 2**  
**MD 97 (Georgia Avenue) and Randolph Road**  
**Summary of Impacts and Costs**

Category		No-Build Alternative	Alt. 'B' Split-Level Interchange	Alt. 'C' Randolph Under Interchange	Alt. 'D' MD 97 Under Interchange	Alt. 'E' At Grade
Displacements (each)	Residential	0	1	2	2	2
	Business	0	3	4	3	4
	Firehall	0	1	1	1	1
	<b>Total</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>6</b>	<b>7</b>
Properties Affected (each)	Residential	0	31	30	19	30
	Business	0	17	12	14	12
	Community Service	0	4	3	3	2
	4(f)- (Greenway and Recreation Field)	0	2	2	2	2
	<b>Total</b>	<b>0</b>	<b>56</b>	<b>48</b>	<b>38</b>	<b>46</b>
Right-Of-Way Required (Acres)	Residential	0	0.8	0.7	0.6	0.7
	Business	0	1.8	1.5	1.8	1.4
	Community Service	0	0.1	0.1	0.3	0.1
	Glenmont Greenway	0	0.03	0.01	0.06	0.02
	Recreation Field	0	0.7	0.6	0.9	0.9
	<b>Total</b>	<b>0</b>	<b>3.4</b>	<b>2.9</b>	<b>3.7</b>	<b>3.1</b>
Environmental (Acres)	Wetlands, Woodlands, Floodplains, Stream Crossings, and Archeological Sites	0	0	0	0	0
	Potential Hazmat	0	0.6	0.4	0.5	0.4
Costs (Millions)	Preliminary Engineering, Construction, R.O.W.	\$0	\$55 to \$59	\$39 to \$43	\$45 to \$49	\$21 to \$25

**NOTES:**

"Community Service" sites include: Mont. Co. Police, Kensington Vol. Fire, Lutheran Church of St. Andrew, and the water tower

"Potential Hazmat" sites include: Amoco, Exxon, Freestate Gas, and the Glenmont Auto Service

**TABLE 3**  
**MD 97 (Georgia Avenue) and Randolph Road**  
**Thinking Beyond the Pavement Issues Comparison Table**

ISSUES	Alt. 'B' Split-Level Interchange	Alt. 'C' Randolph Under Interchange	Alt. 'D' MD 97 Under Interchange	Alt. 'E' At Grade	No-Build Alternative
PEDESTRIAN CIRCULATION & SAFETY	GOOD (BEST)	FAIR	FAIR	BAD (WORST)	POOR
BICYCLE CIRCULATION & SAFETY	FAIR	FAIR	FAIR	FAIR	BAD (WORST)
AESTHETICS / LANDSCAPE / STREETScape OPPORTUNITIES	GOOD	GOOD	GOOD	FAIR	FAIR (WORST)
LOCAL TRAFFIC CIRCULATION	BAD (WORST)	GOOD (BEST)	FAIR	GOOD	FAIR
MINIMIZE NEIGHBORHOOD TRAFFIC CUT-THROUGH PROBLEMS	FAIR	GOOD	GOOD	FAIR	POOR (WORST)
MINIMIZE TRAFFIC TIME SPENT AT INTERSECTION	GOOD (BEST)	FAIR	FAIR	POOR	BAD (WORST)
MINIMIZE TRAVEL TIME FROM VIERS MILL RD. TO MD 650 ALONG RANDOLPH ROAD	GOOD	GOOD (BEST)	FAIR	POOR	BAD (WORST)
MINIMIZE TRAVEL TIME FROM BEL PRE RD. TO VIERS MILL RD. ALONG MD97	GOOD	FAIR	GOOD (BEST)	POOR	BAD (WORST)
PRESERVE EXISTING GREEN SPACE	FAIR	GOOD	FAIR	FAIR	GOOD
DRIVEWAY ACCESS ALONG RANDOLPH RD.	GOOD (BEST)	FAIR	POOR (NO CHANGE)	POOR (NO CHANGE)	POOR (NO CHANGE)
AIR POLLUTION REDUCTION	GOOD (BEST)	FAIR	FAIR	POOR	BAD (WORST)
CONTROL OF SAFE SPEED WITHOUT CONGESTION	DIFFICULT TO EVALUATE				
NOISE REDUCTION	GOOD (BEST)	FAIR	FAIR	BAD	BAD
DISTURBANCE TO TRAFFIC DURING CONSTRUCTION	BAD (WORST)	POOR	POOR	FAIR	GOOD (BEST)
ACCESS TO MASS TRANSIT	GOOD	GOOD	GOOD	POOR	BAD (WORST)
EFFECTS ON POLICE RESPONSE TIME	FAIR	FAIR	FAIR	POOR	BAD (WORST)

Exhibit 5

### **Alternate “B” Split Level**

Alternate “B” was based on a concept originally developed by the Maryland-National Capital Park and Planning Commission. This alternate proposes to carry the north-south through and all right-turn traffic movements at-grade on MD 97. Randolph Road will be built below grade carrying the east-west through and all left-turn movements. The below grade intersection will require a traffic signal. This alternate was refined by SHA to allow east-west through movements for Randolph Road at the surface level to enhance local access. This refinement is proposed to facilitate local access and pedestrian movements crossing Georgia Avenue. A traffic signal on the at-grade level will also be required to facilitate this crossing of Georgia Avenue.

The proximity of Randolph Road and Layhill Road create a broader circulation problem that is not well addressed by either Alternate “B” or Alternate “D”. Along northbound Georgia Avenue between Randolph Road and Layhill Road, both Alternate “B” and Alternate “D” consist of a ramp rising from below grade and an adjacent surface roadway. There is insufficient space to allow traffic on the ramp to turn right, across the surface roadway traffic, onto Layhill Road. Providing separate signal phases for the ramp and the surface roadway to facilitate this “weaving” maneuver would result in a substandard level of service at the Layhill Road intersection. Therefore, a major traffic movement from eastbound Randolph Road to Layhill Road would need to find an alternate route. For Alternate “B”, this alternate route would be signed via Glenallen Avenue. It is likely, however, that motorists familiar with the area would instead use Judson Road, exacerbating community concerns regarding cut-through traffic. The same circulation problem affects the ability for travelers headed from eastbound Randolph Road to the Glenmont Shopping Center, although the alternate route for shopping center traffic (continue east on Randolph Road to the Glenmont Circle intersection) is less circuitous.

As indicated in Exhibit 5, Alternate “B” provides the best vehicular level of service (LOS C) and the safest pedestrian experience of any of the alternates.

### **Alternate “C”, Randolph Road under Georgia Avenue**

Alternate “C” separates through movements on Randolph Road and relocates those movements under Georgia Avenue. All turning movements will take place at-grade. Like Alternate “B”, this alternate also allows for eastbound and westbound local through movements along Randolph Road at-grade.

Because all Georgia Avenue through traffic and all turning movements take place at-grade, the 2020 forecast level of service is LOS E, a higher level of congestion than for Alternate “B”. However, Alternate “C” resolves the significant circulation problems associated with Alternate “B”. Alternate “C” provides longer pedestrian crosswalks than Alternate “B”. The forecast LOS E is better than the intersection congestion standard for the Glenmont Policy Area, satisfying the Sector Plan objective for the interchange design.

The eastbound and westbound local movements along Randolph Road are provided by shared left-through lanes in Alternate "C". This lane configuration requires the use of "split" phasing for the Randolph Road approaches (all eastbound traffic moves in one signal phase and all westbound traffic moves in a separate signal phase). This split phasing may require additional widening of the Georgia Avenue median to provide adequate pedestrian refuge for pedestrians to cross Georgia Avenue in two separate signal phases.

The Alternate "C" level of service could be improved to be better than the Alternate "B" level of service if the split phasing were removed. This would require the prohibition of eastbound and westbound through movements at-grade, resulting in a loss of accessibility for local businesses and residences along Randolph Road between Judson Road and Glenmont Circle. Staff does not recommend removing the split phase from Alternate "C", but the potential to revisit a low-cost increase in capacity twenty or thirty years in the future is an added benefit of Alternate "C".

#### **Alternate "D", Georgia Avenue under Randolph Road**

This alternate separates the MD 97 through traffic from the intersection. Through traffic on Randolph Road and all turning movements take place at-grade. As described in the discussion on Alternate "B", the close proximity of Randolph and Layhill Roads precludes northbound traffic on Georgia Avenue from using the underpass and then making a right turn onto Layhill Road. This major movement must therefore be accommodated at-grade. A total of three northbound through lanes are required for through movements on Georgia Avenue at the surface level, resulting in a large intersection footprint. Alternate "D" provides LOS "E" for projected year 2020 traffic.

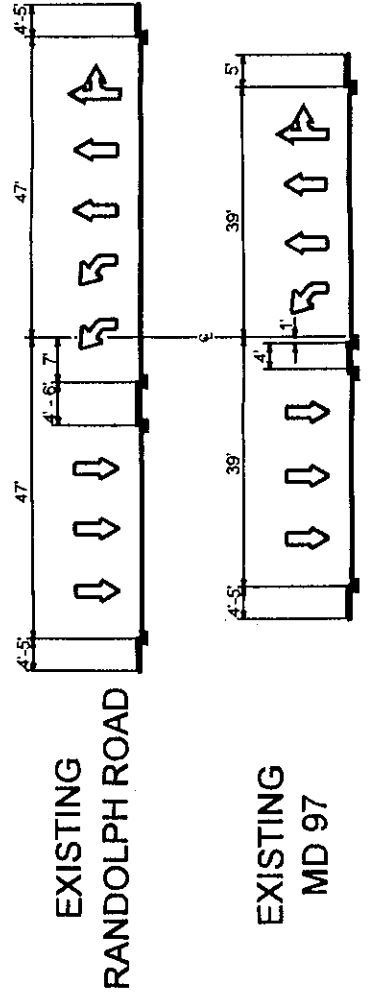
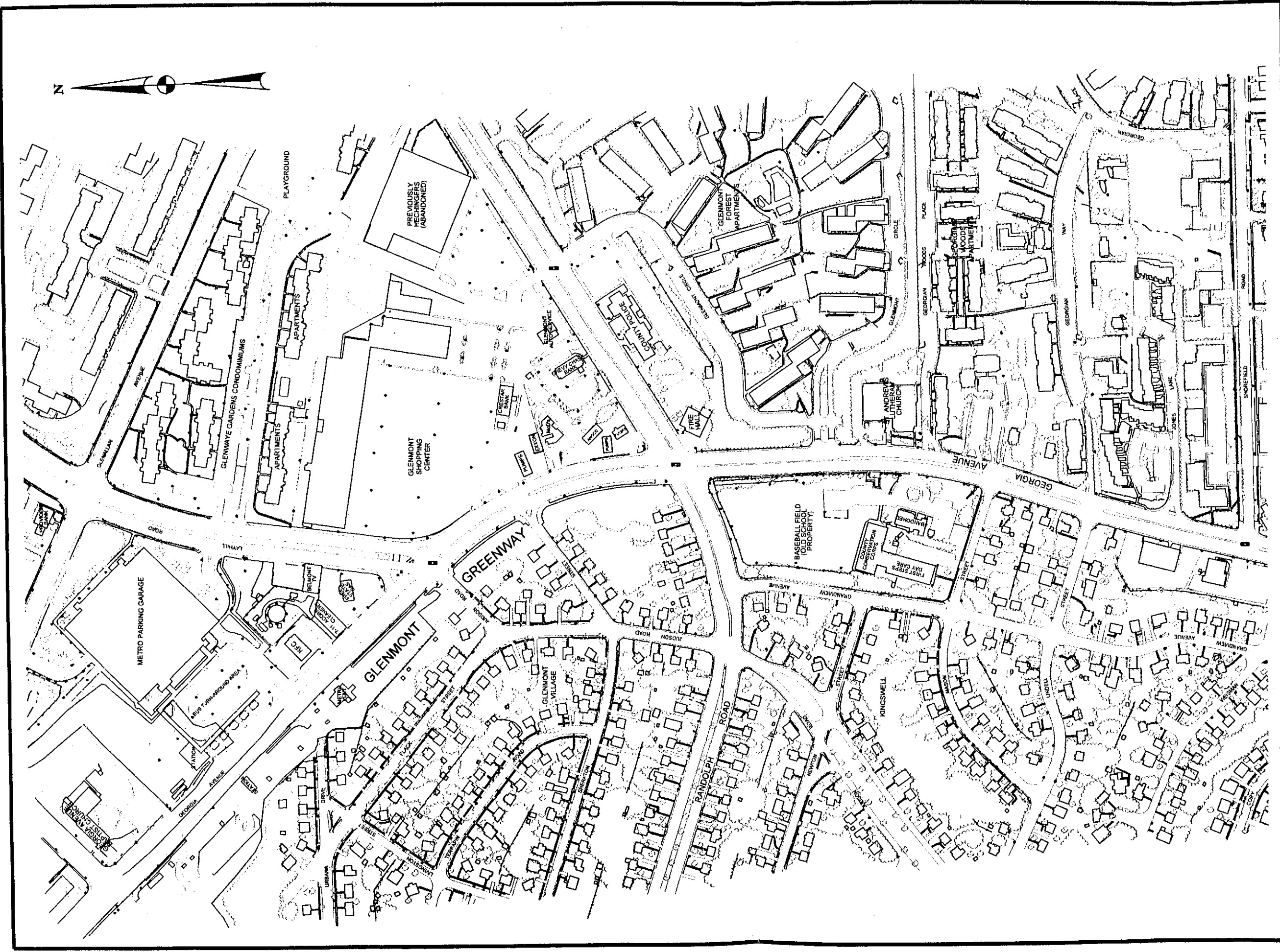
#### **Alternate "E", At-Grade improvements**

Alternate "E" would maintain an at-grade intersection with additional turning lanes provided on the northbound Georgia Avenue and both Randolph Road approaches to the intersection. The resulting intersection would have:

- Five approach lanes on the northbound leg,
- Five approach lanes on the southbound leg,
- Six approach lanes on the eastbound leg, and
- Seven approach lanes on the westbound leg

Alternate "E" would operate at LOS F, but with a V/C ratio about the same as the current V/C ratio of 1.15.

SE:DH:kcw  
Attachments



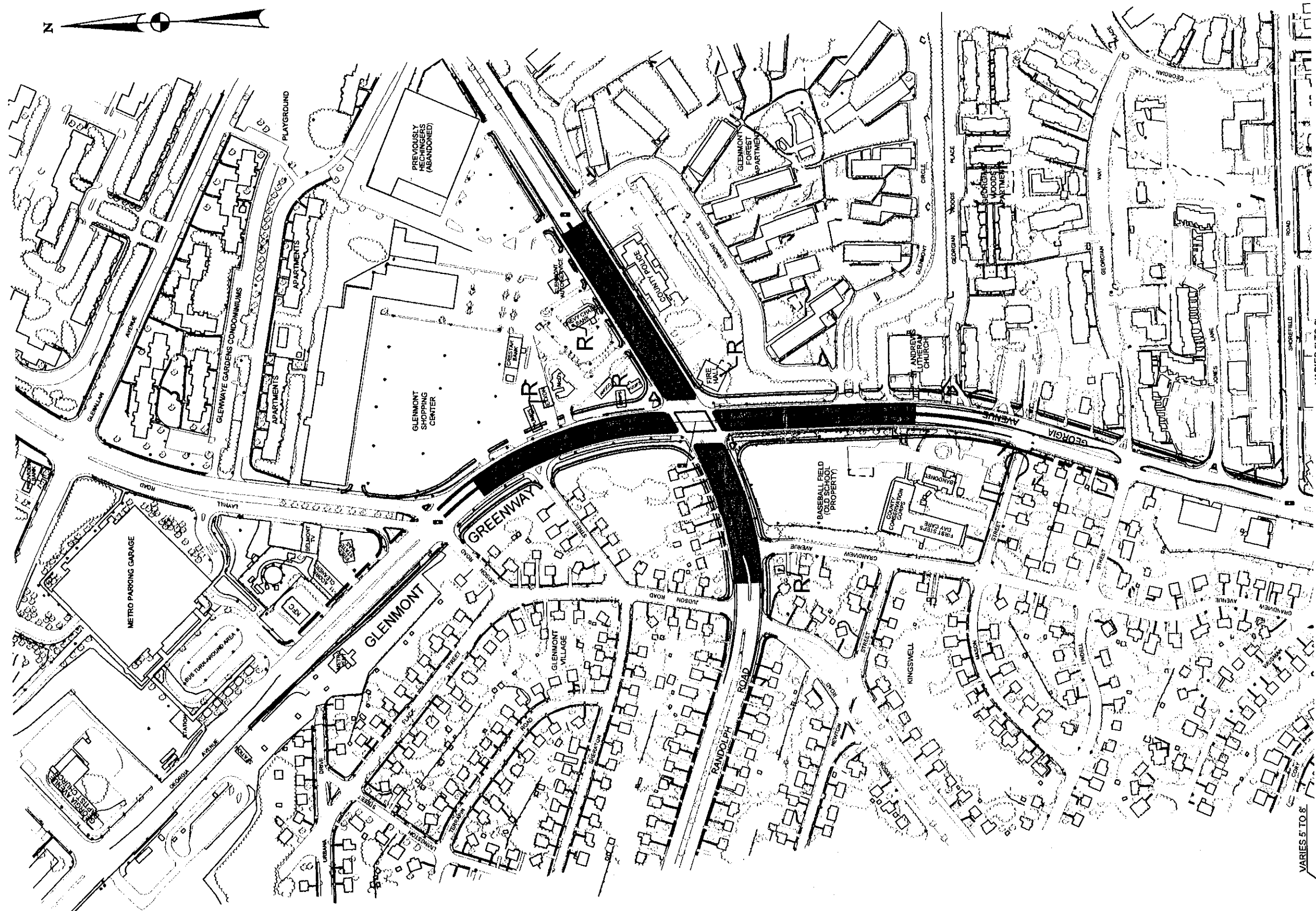
EXISTING RANDOLPH ROAD

EXISTING MD 97

NO BUILD ALTERNATE (EXISTING CONDITIONS)

SCALE: 1"=300'

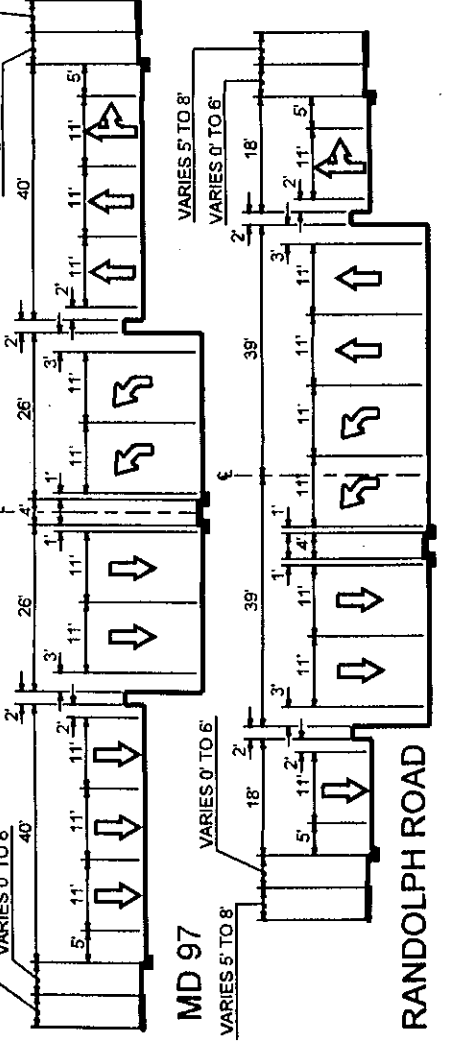
Attachment B



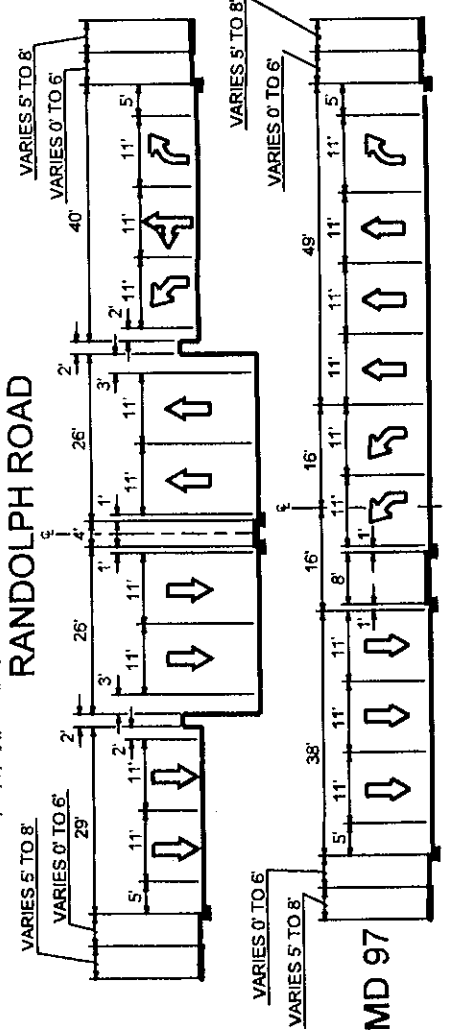
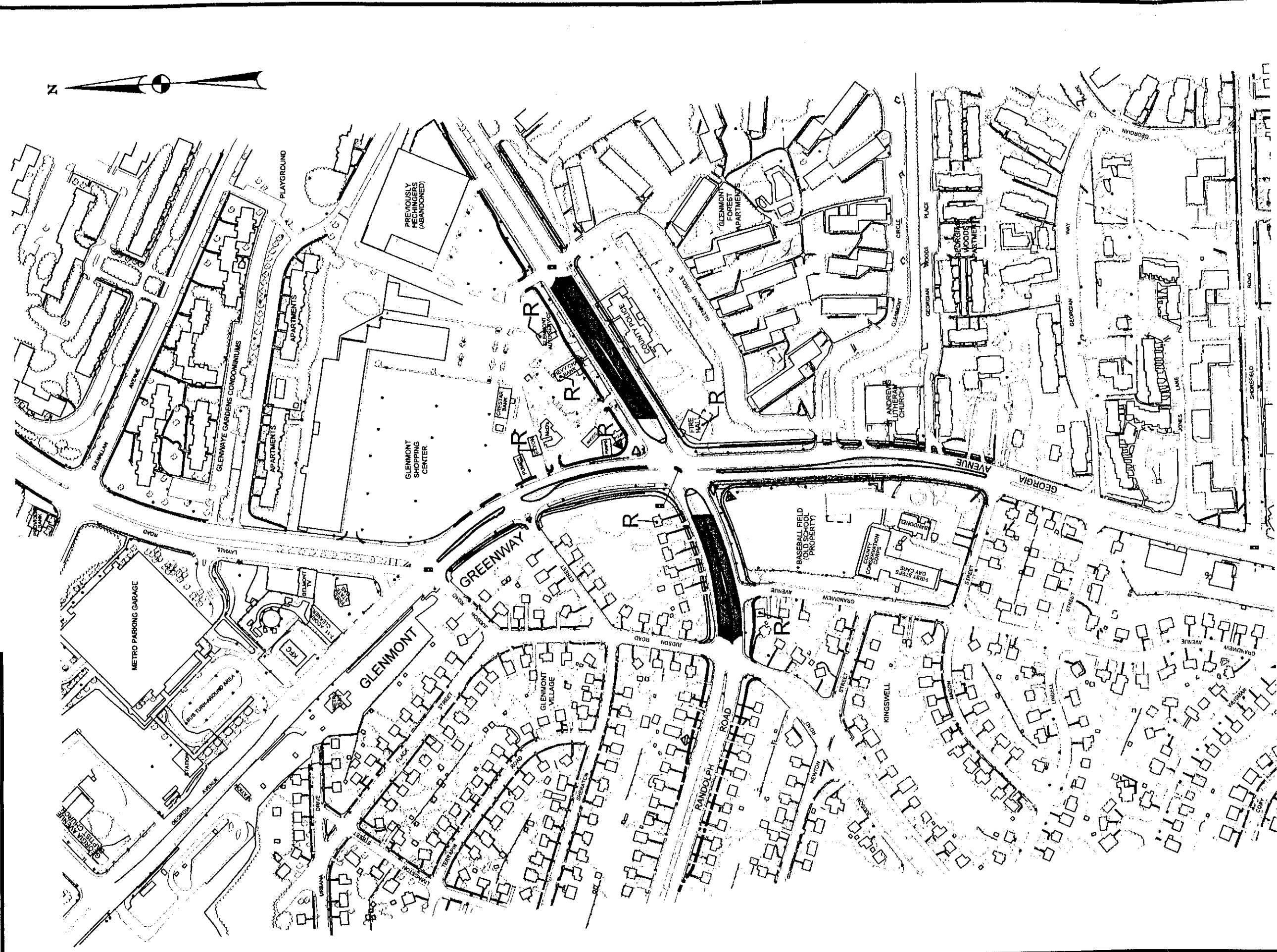
**ALTERNATE 'B'**  
**SPLIT-LEVEL, M-NCPPC CONCEPT**

- R REQUIRED DISPLACEMENT
- PROPOSED ROADWAY AT GRADE
- █ PROPOSED ROADWAY BELOW GRADE

SCALE: 1"=300'

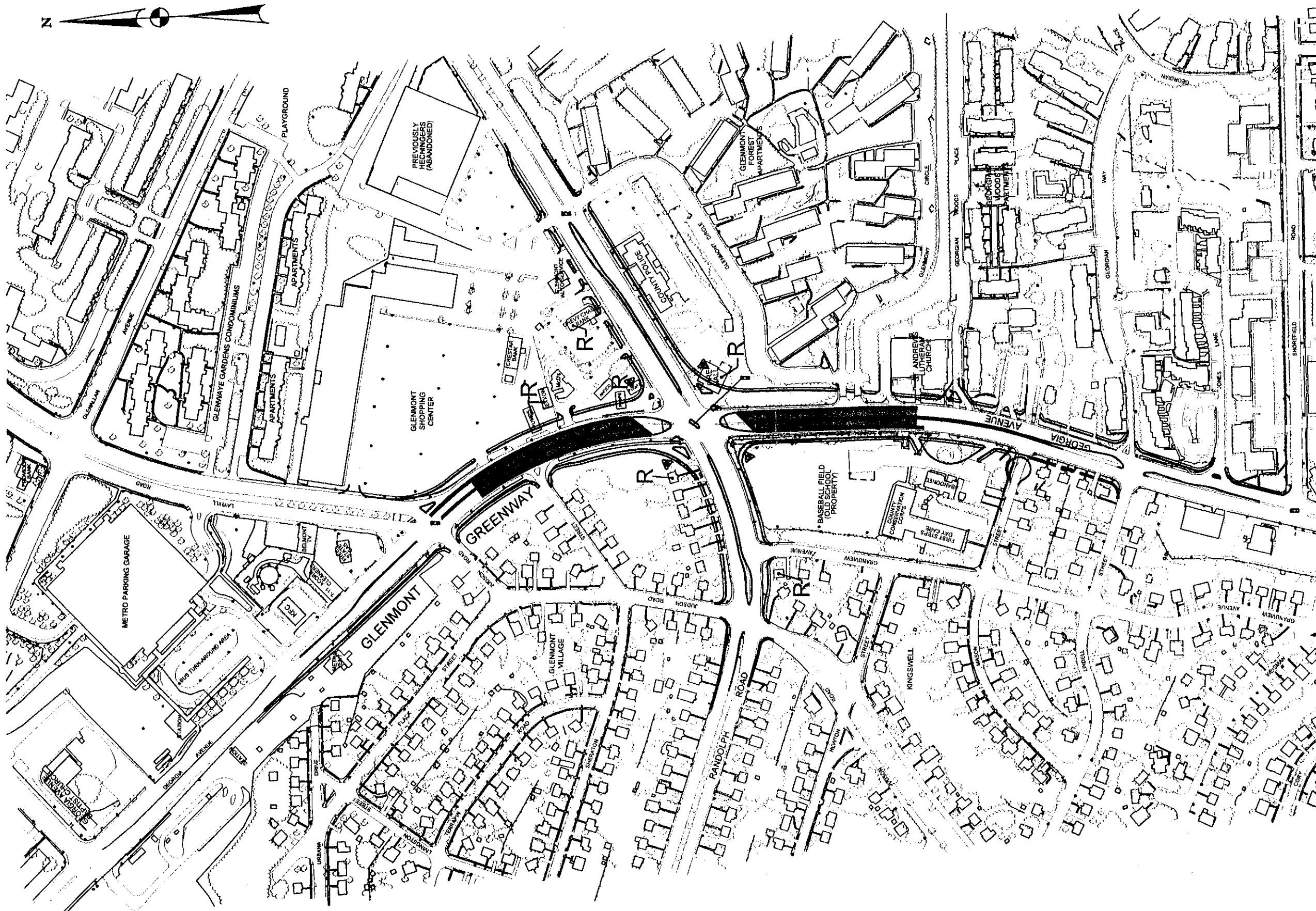




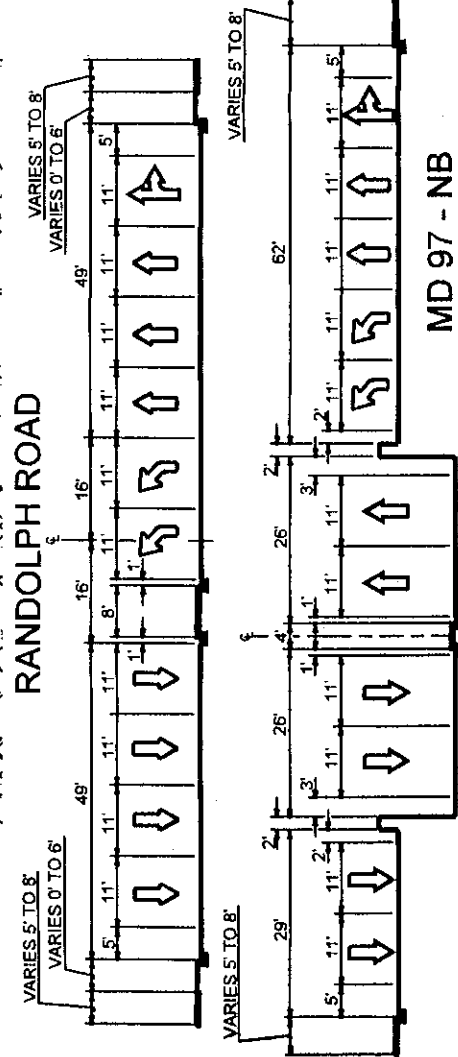


**ALTERNATE 'C'**  
**RANDOLPH ROAD UNDER**  
 R REQUIRED DISPLACEMENT  
 PROPOSED ROADWAY AT GRADE  
 PROPOSED ROADWAY BELOW GRADE  
 SCALE: 1"=300'

MD 97



RANDOLPH ROAD

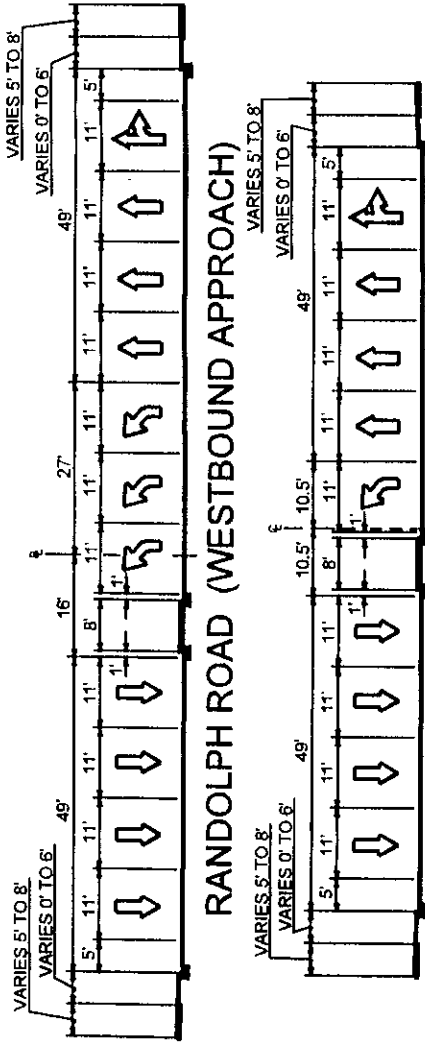
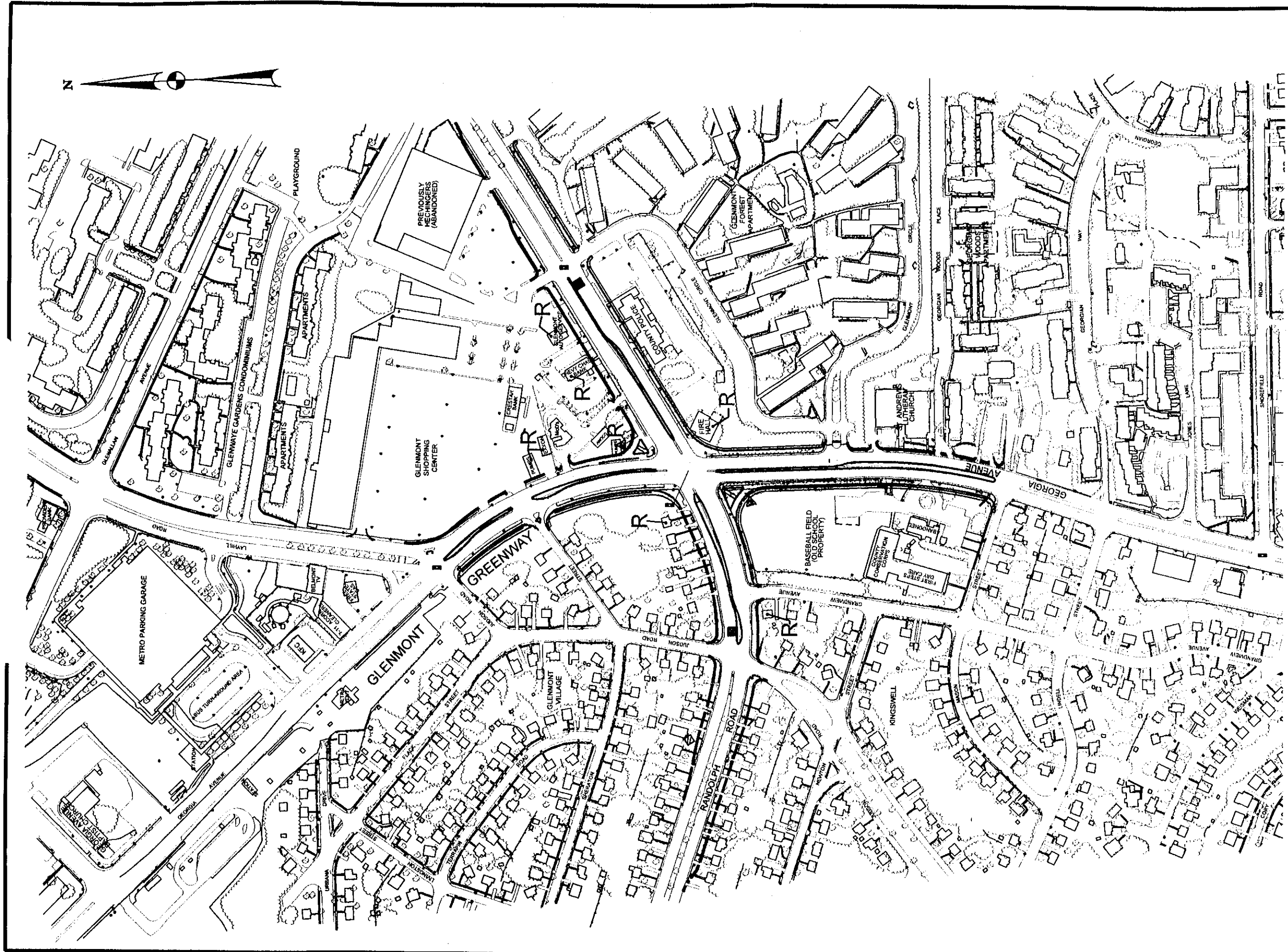


MD 97 - NB

ALTERNATE 'D'  
MD 97 UNDER

- R REQUIRED DISPLACEMENT
- PROPOSED ROADWAY AT GRADE
- PROPOSED ROADWAY BELOW GRADE

SCALE: 1"=300'



ALTERNATE 'E'  
AT GRADE OPTION

R REQUIRED DISPLACEMENT  
PROPOSED ROADWAY AT GRADE