M-NCPPC

MONTGOMERY COUNTY DEPARTMENT OF PARK AND PLANNING

THE MARYLAND-NATIONAL CAPITAL
PARK AND PLANNING COMMISSION

8787 Georgia Avenue
Silver Spring, Maryland 20910-3760

MCPB
ITEM NO. 8
12-11-03

December 5, 2003

MEMORANDUM

TO: Montgomery County Planning Board

VIA: Jeffrey Zyontz, Chief
County-wide Planning Division

Richard C. Hawthorne, Chief
Transportation Planning Unit

Khalid Afzal and Sue Edwards, Team Leaders
Community-Based Planning Division

FROM: Larry Cole: 301-495-4528, for the Park and Planning Department

PROJECT: Redland Road from Crabbs Branch Way to Needwood Road
CIP Project No. 500010

REVIEW TYPE: Mandatory Referral No. 01813-DPW&T-1

APPLICANT: Montgomery County Department of
Public Works and Transportation

APPLYING FOR: Plan Approval

COMMUNITY-BASED PLANNING TEAM AREAS: Georgia Avenue and I-270 Corridor

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RECOMMENDATION: APPROVAL WITH COMMENTS TO DPWT

Staff recommends that the Planning Board approve the proposed project (see Attachment 1: Site Location), with the following comments to DPWT:

Redland Road

1. Shift the alignment of the eastbound lanes of Redland Road west of Crabbs Branch Road four feet south to create an eight-foot wide curbed median with a refuge to accommodate bicyclists. Provide a curbed median between the Metro

Station entrance and Crabbs Branch Way and provide landscaping where the median is greater than four feet in width. Where the median is four feet wide or less, the concrete median should have an ashlar slate pattern.

2. Construct the proposed shared-use path west of Crabbs Branch Road of concrete rather than asphalt.

3. Make adjustments to the design of this project as necessary to facilitate the future construction of enhanced streetscaping elements west of Crabbs Branch Way.

4. Provide street lighting along Redland Road between Crabbs Branch Way and Needwood Road/Old Redland Road and ensure that the lighting levels of the project's roadways and sidewalks meet the standards of the Illuminating Engineering Society of North America (IESNA). Install conduit for the future installation of ornamental lighting from the western project limit to the eastern leg of Needwood Road and create a follow-up streetscaping project to install the ornamental light fixtures

5. Provide a six-foot-wide landscape panel with street trees on the south side of Redland Road between Old Redland Road and the eastern Needwood Road intersection.

6. Evaluate the impact of the proposed construction on the future provision of on-road bike lanes on Redland Road east of Needwood Road. Include the on-road bike lanes as part of the Redland Road Sidewalk facility planning study.

Needwood Road

7. Extend the proposed shared-use path to the western intersection of Deer Park Road and construct a raised crosswalk as part of this project.

8. Provide Tree Save measures, such as root pruning and tree protection fencing, for the 36" specimen Oak tree located at about Sta. 13+75 on the east side of Needwood Road. A Tree Save Plan must be approved by M-NCPPC Environmental Planning staff prior to issuance of sediment and erosion control permit.

Crabbs Branch Way

9. Retain a six- to eight-foot-wide landscape panel along Crabbs Branch Way adjacent to MNCPPC property and plant shade trees.

10. Provide protection fencing for the trees on park property along Crabbs Branch Parkway that are within 30 feet of the limit of disturbance.

11. A park permit is required for all work on park property.

General

12. Install the proposed guardrail between the sidewalk and roadway per the recommendations of the American Association of State Highway and Transportation Officials (AASHTO).

13. Revise DPWT design policy to reflect the United States Department of Transportation (USDOT) guidance on the use of dual handicap ramps to implement the requirements of the Americans with Disabilities Act (ADA). Provide dual, directional handicap ramps wherever feasible within the limits of this project.

14. Revise the County's handicap ramp standard to incorporate the latest ADA guidance and include a two-foot-wide tactile strip of truncated domes at the bottom of all proposed handicap ramps.

15. Maintain an eight-foot path width behind handicap ramps to provide the best bike accommodation. Provide an eight-foot handicap ramp width at all bike crossings.

16. Guardrail installed under this project should be steel-backed timber guardrail.

17. Plant shade trees along the roadways covered by this project to the greatest extent possible. Submit landscape plans to staff for comment.

PREVIOUS BOARD ACTION: None.

PROJECT DESCRIPTION

This project (see Attachment 2: Vicinity Map) would construct an additional lane and curbing on Redland Road from Crabbs Branch Way to Needwood Road, for a total of four eleven-foot-wide through lanes in this segment. Construction of turn lanes and tapers at each end of the project would extend the improvements from the Shady Grove Metro Station entrance to Baederwood Lane for a total distance of about 0.62 mile. The existing four-foot-wide concrete sidewalk on the south side of Redland Road would be replaced in-kind. The existing sidewalk on the north side would be replaced with an eight-foot-wide asphalt shared-use path.

The project would construct a left-turn lane on northbound Needwood Road for a distance of about 860 feet, and would construct a new eight-foot-wide asphalt shared-use path on the east side of Needwood Road.

The project would also construct a right-turn lane on northbound Crabbs Branch Way for a distance of about 610 feet, and would replace the existing five-foot-wide sidewalk in-kind.

STAFF ANALYSIS

This project would be constructed to reduce current traffic congestion along Redland Road east of the entrance to the Shady Grove Road Metro Station. ***Staff believes that this is a much-needed project that would also accommodate future traffic growth to the Metro Station and in the station area.***

Many residents of the area expressed their opposition to the widening of Redland Road as part of their comments on a previous design of the project earlier this year, but the proposed roadway width has been reduced and ***staff believes that the project in its current version addresses most of the concerns of the Park Overlook community.*** These residents were concerned about the impact the project would have on the sidewalk in front of their community and impacts to their community property. DPWT's decision to place most of the impact on the south side would provide better pedestrian and off-road bicyclist accommodation on the north side where it is needed to serve Metro Station-bound transit patrons.

Coordination with Ongoing Master Plan Updates

The subject segment of Redland Road forms part of the border between the Upper Rock Creek and Gaithersburg Vicinity planning areas. The portion of the latter area within the project limits lies within the Shady Grove Sector Plan area. Redland Road's classification would be changed from a primary residential road to an arterial road in the Planning Board Draft of the Upper Rock Creek Master Plan and the Public Hearing Draft of the Shady Grove Sector Plan. The Council's Planning, Housing and Economic Development Committee (PHED) recommended on November 17, 2003, however, that Redland Road's classification remain a primary in the Upper Rock Creek Master Plan. While the standard closed-section arterial roadway has four through lanes, no County standard currently exists for a four-lane primary.

Residents have expressed the concern that a reclassification of the road to arterial would set the stage for a widening of Redland Road beyond the current proposed widening and would result in the commercialization of the road. The draft Upper Rock Creek Master Plan includes language recognizing the largely residential character of Redland Road, particularly between Needwood Road and Rosslyn Avenue (see Attachment 3) and states *"reclassification of Redland Road does not alter that character and should not be used as a basis for rezoning requests."* No additional travel lanes on Redland Road east of Needwood Road are recommended in either the current Master Plans or the draft updates. The update of the Shady Grove Sector Plan will include the segment of Redland Road between MD355 and Midcounty Highway Extended now in the Gaithersburg Vicinity Plan, and staff will reiterate the Redland Road recommendations of the updated Upper Rock Creek Master Plan with specific language restricting the proliferation of Special Exception uses.

This memorandum does not address the merits of the reclassification of this road since the discussion is more appropriate in the context of the Master and Sector Plan updates. Regardless of whether the road is classified as an arterial road or a primary,

the additional traffic capacity to be provided by this project is needed. See Attachment 4 for calculated Levels of Service (LOS) for the Crabb Branch Way and Needwood Road intersection before and after the proposed improvements.

Roadways

Throughout this memo, reference is made to the "Needwood Road intersection". Needwood Road actually intersects Redland Road in two places. Unless otherwise stated, however, a reference to the Needwood Road intersection refers to the eastern, signalized intersection.

Redland Road

The segment of Redland Road between Needwood Road and Crabbs Branch Way carries all traffic to and from both Needwood Road and Redland Road east of the Needwood Road intersection. The two through lanes (one from each road) are funneled into a single through lane on this segment of Redland Road. Because of this funneling effect, there is congestion in this segment that would be alleviated by increasing the number of through lanes available to traffic.

At the eastern end of the subject segment of Redland Road, the project would retain the eastbound left-turn lane at Baederwood Drive. At the request of residents, DPWT will evaluate the need for a traffic signal at this location as part of this project.

At the western end of the subject segment of Redland Road, residents have requested that DPWT evaluate the need for a traffic signal at the Shady Grove Metro Station driveway entrance. DPWT is currently evaluating the need for a traffic signal at this location as a separate project. If a signal is needed, the scheduling is such that it could be installed prior to the construction of the Redland Road project.

Some residents have questioned whether the proposed improvements would cause disruption for only a temporary benefit. The traffic forecast for this area shows, however, that the proposed improvements would be sufficient to accommodate future land uses at build-out being examined in the Shady Grove Sector Plan amendment process for the year 2050.

Left-Turn Restrictions

At the Old Redland Road/Needwood Road (western intersection) intersection, no room exists to create a left-turn bay to Needwood Road (western intersection). To avoid delays for eastbound peak-period traffic, DPWT proposes to prohibit left turns. Drivers would have to continue to the traffic signal at the eastern leg of Needwood Road to enter the Park Overlook community. Staff supports the proposed peak-period restriction. For westbound traffic, left turns would continue to be allowed to Old Redland Road since there is very little traffic generated by the eight homes on this street.

Needwood Road

A 550-foot-long left lane plus a 300-foot-long taper would be constructed on Needwood Road to ease congestion at this intersection. Left turns would also be permitted from the left-through-right lane.

Crabbs Branch Way

A 500-foot-long northbound right-turn lane, plus taper, would be provided on Crabbs Branch Way. Construction of the proposed right-turn lane would require the taking of approximately 3,650 square feet of Park property along the east side of Crabbs Branch Way.

The existing roadway has an eight-foot-wide landscape panel with street trees between the sidewalk and curb at the southern end of the project. The proposed typical section would eliminate the street trees and reduce the landscape panel to two feet. ***Staff recommends that a six- to eight-foot-wide landscape panel with street trees be provided in the proposed construction.*** Providing a landscape panel wide enough to plant trees in would increase the park impact by about two to three thousand square feet but would provide a better streetscape, improving this area's character.

Guardrail would be installed behind the sidewalk to protect errant drivers from the adjacent steep slope; however, it appears that a much longer length is proposed than required. Staff recommends that DPWT re-evaluate the length of the proposed guardrail at this location. Staff comments on the location of the proposed guardrail in relation to the sidewalk are shown in **Guardrail** below.

Bicycle Compatibility

Off-road bicyclist accommodation and safety would be greatly improved by this project; however, on-road accommodation would be diminished.

Redland Road

Bicyclists along both Needwood Road and Redland Road are funneled into this segment of Redland Road approaching the station the same way that drivers are. Therefore, this segment provides critical access to the Shady Grove Metro Station.

Off-road Accommodation

An eight-foot-wide shared-use path would be constructed along the north side of Redland Road between the Metro Station entrance and Needwood Road. This path would intersect existing and proposed paths on Crabbs Branch Way and a proposed path on Needwood Road. The proposed design is the result of fitting the various bikeway needs to the site conditions and balancing them with other objectives. The Countywide Bikeways Functional Master Plan, the Shady Grove Sector Plan and the Upper Rock Creek Master Plan are all being updated currently and will reflect the accommodation to be provided by this project.

There is an offset in the alignment of the eastbound through lanes of Redland Road at the Crabbs Branch Way intersection that could be reduced by shifting the lanes on the west leg of the intersection four feet to the south. Such a shift would provide the opportunity to create an eight-foot-wide curbed median with a refuge to accommodate bicyclists and pedestrians. Since the Crabbs Branch Way path shifts from the east side of the road to the west side at this intersection, this appears to be the best place to accommodate this change for path users. There is a large area that is proposed to be striped out of the pavement to create the left-turn bay. ***Staff recommends that a median be constructed between the Metro Station entrance and Crabbs Branch Way and be landscaped where possible***. (See Attachment 5.)

While the Shady Grove Sector Plan update intends that bicyclists coming from the east go north along Crabbs Branch Road and enter Shady Grove Metro Station at a new crossing location, a short section of path is proposed between the Metro driveway and Crabbs Branch Way. Staff believes that this would provide a useful alternative route to the station. Since this segment would be in the more urban Metro station area, ***staff recommends that the path between the Metro driveway and Crabbs Branch Road be constructed of concrete rather than asphalt.***

The proposed path on the east side of Needwood Road would cross the east leg of the Redland Road intersection where users can be provided more time to cross. The design of the bike crossing needs to be improved in two ways, however. The handicap ramps need to be eight feet wide – the width of the path. Also, an easily navigable route is needed, unobstructed by ramps. Staff recommends that at least an eight-foot path width be provided outside the ramps in the southeast, northeast and northwest quadrants of the Needwood Road intersection. Attachment 6 shows the proposed condition on top and staff's recommendations on the bottom.

On-Road Accommodation

One concern that does not appear possible to resolve is that on-road bike accommodation would be diminished. On-road bike lanes would not be provided and the travel lanes would be slightly narrowed from the existing. Commuter cyclists usually want to travel with other vehicular traffic but the constraints posed by the dam on Redland Road, which retains a regional stormwater management (SWM) pond on the north side, would make it very difficult and expensive to implement both on-road bike lanes and an off-road bikeway while accommodating the needed additional travel lane.

The design of the proposed off-road path would mitigate this diminished accommodation, however. The path would not be interrupted by driveways as are most off-road facilities along highways. The path would be bordered only by Park Overlook community property, the stormwater management pond and Metro property. Also, while wider travel lane would not be available to bicyclists during the peak hour, there would be two travel lanes in each direction whereas there is only one now. So drivers would be able to pass on-road bicyclists by using the left lane.

East of Needwood Road, the Master Plan recommends that on-road bike lanes continue along Redland Road up to Muncaster Mill Road but no provision for these lanes has been made in the proposed construction. DPWT views this segment as being a transition area back to the existing pavement width; however, at about 1,000 feet, it is quite long. While staff believes that it would be best if the bike lanes were constructed as part of this project, they could be constructed at some future date.

There is a facility planning study about to begin along this segment of Redland Road for the implementation of a sidewalk. ***Staff recommends that DPWT include the provision of on-road bike lanes east of Needwood Road as part of the sidewalk facility planning study, but DPWT should also make some preliminary assessment as part of this project to minimize the amount of proposed curbing that would have to be removed later.*** Evaluating the future installation of bike lanes at this time would also help to avoid impacting adjacent property owners twice.

Needwood Road

An eight-foot-wide shared-use path would be constructed along the north side of Needwood Road within the limits of this project, as recommended in the Planning Board Draft of the Upper Rock Creek Master Plan. The path would be offset from the curb by an eight-foot-wide landscape panel with street trees.

A separate Needwood Road Sidewalk project was approved administratively by staff in January 2003. That project constructed a sidewalk along the frontage of the Needwood Golf Course and Needwood Mansion. The sidewalk was constructed of asphalt per the staff's recommendation so that it might more easily be expanded to an eight-foot-wide path in the future. The park and sidewalk are on the south side of Needwood Road whereas the proposed path is on the north side of Needwood Road. DPWT plans to cross path users via a raised striped crosswalk on Needwood Road at the western Deer Lake Road intersection (see Attachment 7). Staff believes that this would safely accommodate path users in the ultimate condition, but the project would leave a gap between the proposed segment of path and the existing sidewalk which exists only east of Deer Lake Road. ***Staff recommends that the proposed shared use path be extended to the western intersection of Deer Lake Drive and that the raised crosswalk be constructed as part of this project.***

Crabbs Branch Way

The Public Hearing Draft of the Shady Grove Sector Plan calls for a shared-use path on the east side of Crabbs Branch Way north of Redland Road and on the west side of Crabbs Branch Way south of Redland Road. A segment of path already exists on the north leg of the intersection. The design needs to be modified to accommodate the switch from one side to the other and to accommodate the continuation of the path south of Redland Road.

Staff recommends that a design similar to the one recommended above for Needwood Road be used to ensure that bicyclists have a relatively flat route while making the switch from one side of the road to the other and that handicap ramps are

sized to accommodate bikes (see Attachment 5). It appears that the safest way to cross path users at this intersection would be on the west leg via the refuge recommended above.

Pedestrian Accommodation

Dual handicap ramps should be used wherever feasible to give handicapped pedestrians the best directional guidance and to provide all pedestrians the shortest roadway crossing, per ADA's Best Practices Manual, "Designing Sidewalks and Trails for Access". DPWT Traffic staff have said that their internal policy calls for single ramps as a first choice. ***Staff recommends that DPWT revise their design policy to reflect the guidance given by the USDOT to implement the requirements of ADA.***

The latest ADA guidance also states that a two-foot-wide tactile strip of truncated domes should be used at the bottom of all handicap ramps to ensure that blind persons can detect the bottom of the ramp. The County's handicap ramp standard needs to be revised to reflect this guidance.

Redland Road

North Side

The existing four-foot-wide sidewalk along the north side of Redland Road would be replaced by an eight-foot-wide shared-use path. West of Crabbs Branch Way, six-foot-wide landscape panels would be provided.

East of Crabbs Branch Way, the existing twelve-foot-wide landscape panel (outside the dam area) would be reduced to 4.7 feet. In addition to serving as Metro access, the segment of sidewalk between the two legs of Needwood Road is used by the residents of Park Overlook as part of a one-mile-long walking route through their community. The proposed widening to eight feet would make it much easier for users to pass each other without stepping to the side. Separation from the roadway would be reduced, however, and the landscaping panel would be less than the County minimum for planting street trees. This issue is discussed further in Landscaping below.

South Side

West of Crabbs Branch Way, the existing five-foot-wide sidewalk would be replaced in-kind and the six-foot-wide landscape panel would be retained.

East of Crabbs Branch Way, the existing four-foot-wide sidewalk would be replaced in-kind but the existing twelve-foot-wide landscape panel (outside the dam area) would be reduced to 4.7 feet. The proposed sidewalk would be one foot narrower than the five-foot-wide standard used for both arterials and primaries. Given the competing interests in this area and the desire to minimize right-of-way impacts, and the much lower pedestrian volumes on the south side of Redland Road, staff believes that the proposed four-foot sidewalk is sufficient, but the issue of the offset from the roadway is discussed further in Landscaping below.

Needwood Road

A new eight-foot-wide shared-use path would be constructed along the north side of Needwood Road, separated from the roadway by an eight-foot-wide landscape panel with street trees. Although the landscape panel width is two feet short of the standard for a primary road, staff believes that this is sufficient. No sidewalk is proposed for the south side of Needwood Road at this time. The crossing between the existing south side sidewalk east of the project limits and the proposed shared use path on the north side is discussed above in Bicycle Accommodation.

Crabbs Branch Way

The existing five-foot-wide sidewalk would be replaced in-kind but the landscape panel would be reduced from the standard eight feet to two feet and the street trees eliminated, diminishing the pedestrian experience at the gateway to the Metro neighborhoods. ***Staff recommends that the landscape panel with street trees be reestablished in the new construction.*** Implementing this recommendation would increase the impact on Crabbs Branch Park, which is addressed in **Parks Impacts** below.

Lighting

No street lighting exists along Redland Road between Crabbs Branch Way and Needwood Road/Old Redland Road. While continuous roadway lighting is standard along County roads, it is particularly important that lighting be provided for pedestrians in this segment, which is one block from the entrance to the Shady Grove Metro Station. Because of the presence of the dam, there is no roadside development that could provide even spillover lighting. ***Staff recommends that street lighting be provided in this block and that the lighting for the entire project area be checked to ensure that current national lighting level standards would be met.***

Guardrail

The existing condition along Redland Road has a mix of guardrail in front of and behind the sidewalk. DPWT proposes to place all of the new guardrail behind the sidewalk. ***Staff believes that moving the guardrail to the back of the sidewalk would create an inhospitable environment for pedestrians,*** particularly along the 850-foot length of the dam, where all of the existing guardrail is now in the correct location between the road and sidewalk and protects pedestrians as well as drivers.

The American Association of State Highway and Transportation Officials (AASHTO) recommends that where guardrail and sidewalk are both required, the guardrail should be placed between the curb and sidewalk so that pedestrians as well as drivers are protected (see Attachment 8). ***What DPWT proposes is against AASHTO recommendations.***

DPWT has concerns about placing guardrail at the curb line and about providing a safe terminal at the intersections, but there are many examples of guardrail at the curb line around the county, including locations where there is a sidewalk. One good example is at the northwest corner of Twinbrook Parkway and Veirs Mill Road where there is a guardrail at the curb, with a wooden rubrail at the back of the guardrail to protect pedestrians from accidentally bumping into the posts; a fence protects pedestrians from the adjacent steep slope. Another closer example where the guardrail is at the face of the curb to protect pedestrians is on Sixteenth Street at the intersection of Spring Street

Along the frontage road on the north side of I-270 between Old Georgetown Road and Rockledge Boulevard, the Maryland State Highway Administration opted to use jersey barrier in place of guardrail subsequent to the Board's comment that the off-road bikeway needed additional protection. But as with guardrail, there are traffic-safe ways to teminate jersey barrier.

DPWT has consistently refused to place the guardrail between the sidewalk and roadway on their projects, including the Montrose Parkway project where the guardrail is proposed at the curb on the side of the road without sidewalk but is proposed to be behind the sidewalk on the other side of the road where it would not provide a benefit to pedestrians.

AASHTO is very conservative in its recommendations in regard to safety and surely considered the issues DPWT has raised when it made its recommendation to place the guardrail between the sidewalk and roadway. There are a sufficient number of possible end treatments to choose from that one can be found to best fit this project's constraints, terminating the guardrail safely and addressing DPWT's concerns.

Staff recommends that all proposed guardrail be placed between the sidewalk and roadway as recommended by AASHTO.

Staff recommends also that steel-backed timber guardrail be used in place of galvanized guardrail since it would be visually more compatible with the residential character of the area.

Landscaping

Staff is concerned that the proposed project would provide street trees in a landscape panel between the curb and sidewalk in three areas only – along both sides of Redland Road west of Crabbs Branch Road, along the north side of Redland Road east of Needwood Road, and along the east side of Needwood Road. The lack of street trees would mean that the perceived width of the roads would be wider and that speeds along these roads may increase as a result. There are constraints to providing trees in some areas, most particularly across the dam for the stormwater management pond, but staff believes that the planting of trees along the County's roadways in accordance with the County Code should be maximized.

In addition, trees planted along the roadway should be shade trees, rather than ornamental trees, so that they will constitute a major aesthetic benefit in the streetscape and provide shade for pedestrians. Staff recommends the use of the following species: for Redland Road – Gleditsia triacanthos "Moraine", along Needwood Road – Marshall's Seedless Ash, and along Crabbs Branch Way – Red Maples.

The Public Hearing Draft of the Shady Grove Sector Plan defines the area west of Crabbs Branch Way as the Metro North and Metro East/Old Derwood Metro neighborhoods. The recommended streetscaping treatment would be similar to that of CBD's, full-width brick sidewalks from curb to right-of-way line on Redland Road with street trees in tree pits and brick accents at the Crabbs Branch Road intersection to mark the gateway of the Metro neighborhoods. The funding of this project does not support such a high level of streetscaping, however. ***Staff recommends that DPWT make adjustments to the design of this project where necessary to facilitate the future construction of enhanced streetscaping elements west of Crabbs Branch Way.***

The Shady Grove Plan defines the area north of Redland Road between Crabbs Branch Way and the western Redland Road/Needwood Road intersection, adjacent to the stormwater management pond, as the Buffer Area. The area further east is defined as the Derwood communities. The proposed landscape panel in these areas would be less than that needed to plant street trees. On the north side, DPWT has successfully avoided impacting the landscaping and berm on the Park Overlook community property. To improve the appearance of this side of the road, however, and to give pedestrians a better environment, staff recommends that DPWT consider having other plant materials, such as shrubs, if the HOA will agree to maintain them. On the south side, outside the dam area and where the landscaping and berm constraints do not exist, staff recommends that DPWT move the sidewalk back 1'-3" and plant street trees in the resulting six-foot landscape panel. Where the additional space cannot be obtained, staff believes that DPWT should negotiate with the property owners to allow the planting of trees behind the sidewalk to reduce the apparent width of the roadway corridor and help to keep traffic speeds down.

Other Aesthetic Elements

Some citizens have expressed a desire for Redland to have the same aesthetic elements as the King Farm development, such as ornamental lighting, brick sidewalks and brick crosswalks. While both the project area and the King Farm development are in the Shady Grove Metro Station area, there are at least two differences. First, King Farm is in the City of Rockville and what their public works staff finds acceptable in the public right-of-way may be different from what County public works staff finds acceptable. Second, the higher-cost aesthetic features of King Farm were built by and are maintained by the developer, not by the public sector. Since the proposed widening of Redland Road is intended to directly serve the Metro station, staff believes that it is not unreasonable for the residents to request some enhancements that are also associated with Metro station areas. The budget of the Redland Road project, however, does not include funding for aesthetic features beyond what would normally be expected for a standard highway project. Staff believes that providing ornamental

lighting would be beneficial and would provide a good transition to the Metro station area, but that most other items would prove too costly. ***Staff recommends that DPWT install conduit for ornamental lighting as part of the subject project and create a future follow-up project to install ornamental lighting fixtures*** and whatever additional features DPWT and the County Council agree should be funded.

Environmental

This project is exempt from providing a Forest Conservation Plan. The project would encroach on the critical root zone of one 36-inch specimen oak tree located at about Sta. 13+75 on the north side of Needwood Road. Staff recommends that Tree Save measures, such as root pruning and tree protection fencing, be provided to ensure the viability of the tree.

The site falls in the Crabbs Branch subwatershed, part of the Upper Rock Creek watershed, which has a Use IV classification. Crabbs Branch has a rating of good for both stream and habitat conditions. All of the Lower Rock Creek watershed is designated a watershed management area where the Department of Environmental Protection is studying the feasibility of potential habitat improvements.

With regard to street tree location, in addition to creating a more pedestrian-friendly environment, street trees between the bikeway/sidewalk and the roadway provide better shading of the roadway pavement to reduce the warming of stormwater. Increased temperatures in stormwater lead to increased temperatures and decreased oxygen in streams. Environmental Planning staff reiterates the recommendation to plant shade trees between the curb and sidewalk.

Parks Impacts

The proposed project will impact Crabbs Branch Park, which abuts the southeast corner of the Crabbs Branch Way/Redland Road intersection (see Attachment 7). This work will require a park construction permit. A note must be placed on the plans stating, "No staging for construction and no storage of materials or equipment will be allowed on park property without prior approval from Park Manager and/or MNCPPC-Inspector."

The project would require the taking of approximately 3,650 square feet mostly along the east side of Crabbs Branch Way. As noted above, staff recommends that the landscape panel between the relocated sidewalk and the curb be increased by just over five feet so that shade trees can be retained. This would increase the park impact by about two to three thousand square feet.

The trees on park property along Crabbs Branch Way that are within 30 feet of the limit of disturbance must be protected during construction with a tree protection fence.

PUBLIC OUTREACH

This project is classified as an Intersection Improvement project and, while more extensive than other such projects, has not gone through a separate facility planning phase. As such, the public outreach was less than is typical for other projects of this size, which generally go through Facility Planning, and did not occur until late in the design process. The public meetings were as follows:

- June 28, 2001 public meeting at Redland Middle School
- DPWT met with Representatives of the Park Overlook HOA on August 1, 2002
- March 20, 2003 Park Overlook HOA annual meeting at Candlewood Elementary School (DPWT was invited to the meeting.)
- May 21, 2003, public meeting at Candlewood Elementary School attended by approximately 200 people.

A public hearing on this project is scheduled for December 15, 2003.

BACKGROUND

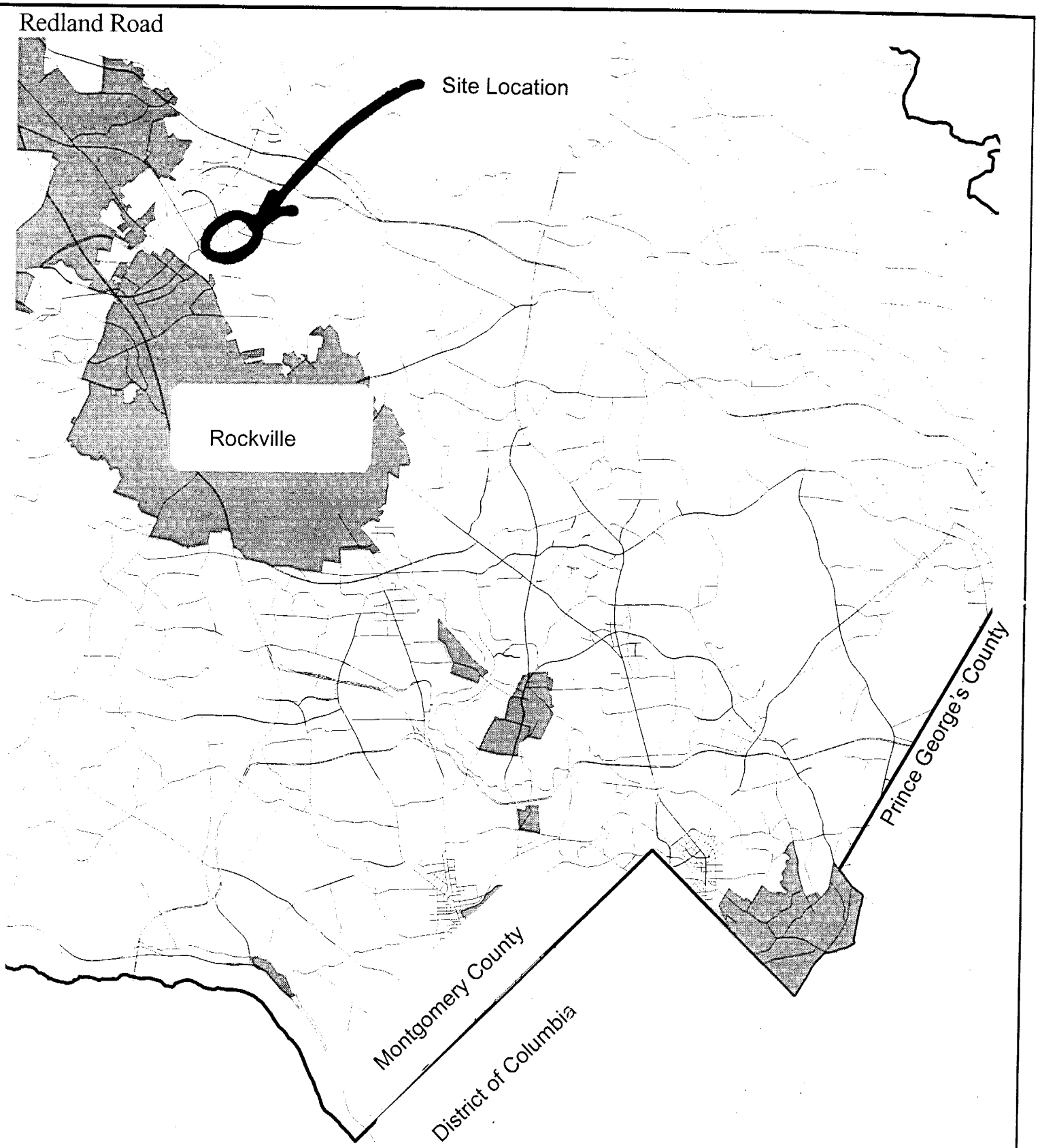
This project was initiated as a follow-up project to DPWT's Congested Intersection Initiative (CII) study, similar to the Maryland State Highway Administration's Congestion Relief (CRS) study. Both the Crabbs Branch Way and Needwood Road intersections with Redland Road were identified as having traffic congestion that exceeded area standards. In the analysis of these intersections, it was determined that the improvements to one intersection would have a close effect on the other and that it would be best if they were both improved at the same time. A separate Project Description Form (PDF) was then approved for this project.

The project did not initially include bike accommodation as recommended in the Master Plan. A redesign of the project that included bike lanes resulted in a higher construction estimate requiring more funds. Earlier this year, the County Council voted to approve the additional funding subsequent to testimony by DPWT and M-NCPPC staff supporting the need to include the Master Plan-recommended bike lanes in the project.

The project was previously scheduled for the Board's review in July 2003, but the review was delayed pending a major revision of the project. The current design of this project reflects DPWT staff's responsiveness to the concerns raised by residents and staff about the previous design, which included reversible lanes on Redland Road. The reversible lanes are no longer proposed, simplifying the traffic operation and making the formerly proposed overhead lane control signals unnecessary. The bike lanes were deleted from the project in favor of a shared-use path, which is recommended in both the drafts of the area Master and Sector Plans.

LC:kcw

mmo to mcpb re MR Redland Road 3.doc



Attachment 1. Site Location

Map Compiled On 12-04-2003 at 08:38 AM
Map Scale: 1 inch = 10000 feet or 1:120000

0 10000 Feet

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Park and Planning
Transportation Planning Unit
8787 Georgia Avenue | Silver Spring, Maryland 20910
301.495.4525 voice | 301.495.1302 fax | http://www.mc-mncppc.org

Master Plan of Highways Centerline 2
Municipalities
Montgomery County

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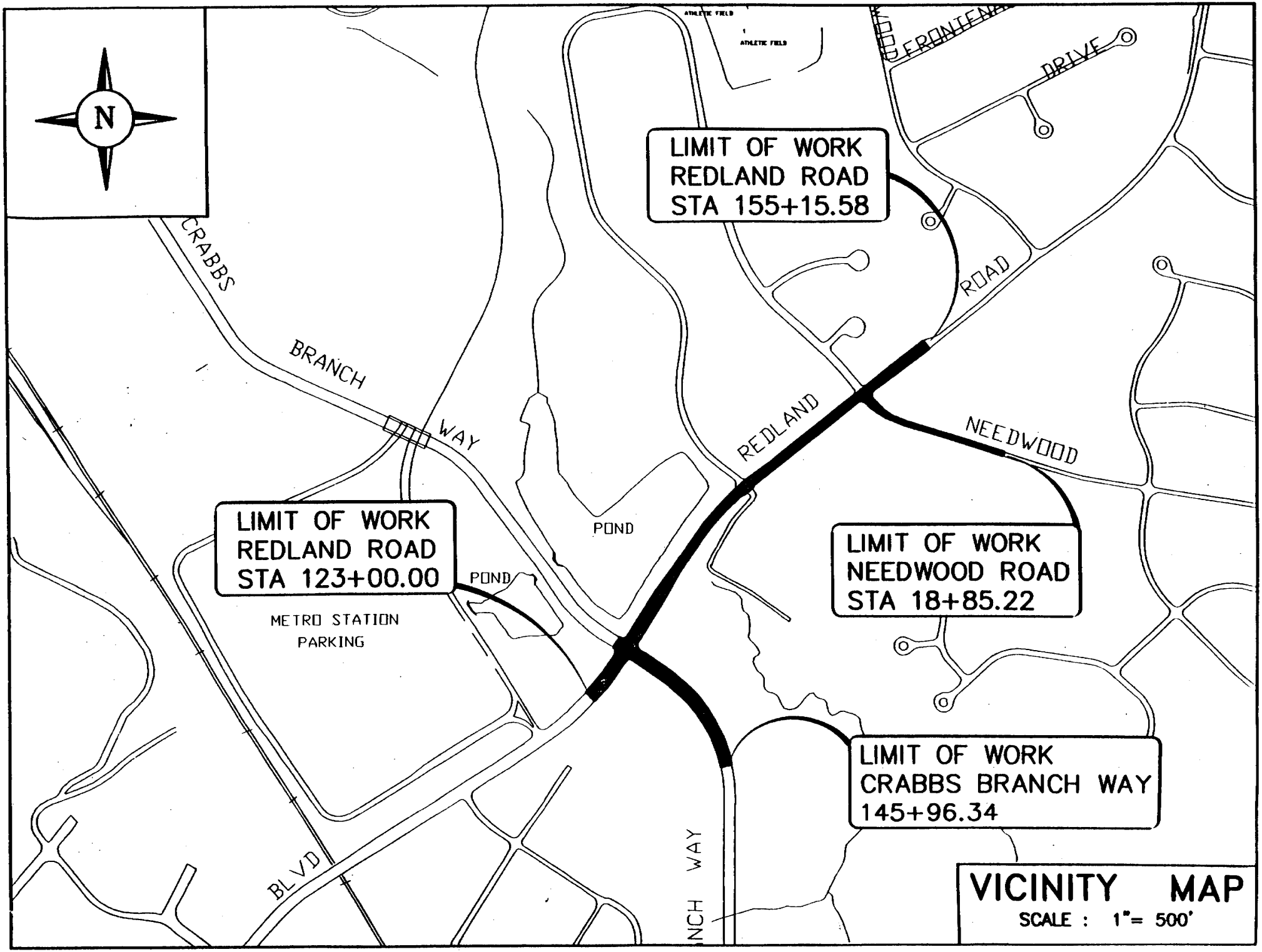


Attachment 2

This adverse affect could be alleviated by retaining the existing roadways and constructing Bowie Mill Road relocated. This design would increase the number of stream crossings, and is therefore not preferred due to environmental effects. This Plan therefore recommends retaining the dog-leg configuration. The State Highway Administration should conduct further study of operational improvements, such as extending or widening selected turn lanes and examining signal phasing, to enhance safety and reduce delays at these closely spaced intersections. Should a subsequent public agency study or subsequent subdivision proposal satisfy both transportation and environmental objectives by relocating Bowie Mill Road to meet Needwood Road, such a proposal should be consistent with this Plan.

Recommendation

- Retain the existing configuration of the intersections of Muncaster Mill and Bowie Mill Roads and of Muncaster Mill and Needwood Roads.

- Support a State Highway Administration study of operational improvements and consider environmentally and operationally appropriate relocations consistent with this Plan.

Redland Road Classification

The 1985 Plan classified Redland Road as a primary residential street (P-7) from Muncaster Mill Road to the Plan boundary at Crabbs Branch Way. The recommended right-of-way is not specified in the 1985 Plan, but Section 49-34 of the County Code identifies a 70-foot recommended right-of-way for primary residential roads in cases where a master plan does not otherwise indicate a recommended right-of-way.

This two-mile section of Redland Road operates more as an arterial roadway than as a primary residential roadway. This is due to several factors as described below:

- **Network connectivity:** The 1985 Plan envisioned an extension of Shady Grove Road (M-42) including a direct connection across Rock Creek to Muncaster Road in the vicinity of the Agricultural History Farm Park. The 1995 Muncaster Road and Muncaster Mill Road Highway Classification and Alignment Master Plan Amendment removed the M-42 extension and reclassified Muncaster Road from a major highway to an arterial roadway (A-102) between Olney-Laytonsville Road (M-60) and Muncaster Mill Road (reclassified as A-93 in the 1995 amendment). To the west of the Planning Area boundary at Crabbs Branch Way, Redland Road is classified as a four-lane industrial roadway (I-9) with an 80-foot right-of-way. Redland Road is the most direct connection between Muncaster Road and the Shady Grove Metrorail station.

- **County Code guidance:** Section 49-34 of the County Code describes an arterial roadway as any road other than a business district road that connects two state or federal roads and will be used primarily for through traffic. Redland Road connects Muncaster Mill Road (MD 115) to Rockville Pike (MD 355). To the southwest of Muncaster Mill Road, Redland Road carries an average daily traffic volume of approximately 13,200 vehicles. This volume is forecast to increase only slightly, to 14,200 vehicles, by 2025, if no other changes are made to the east-west transportation network. This volume of

traffic is within the carrying capacity of a two-lane roadway, but substantially higher than would be generated by the neighborhoods that access Redland Road, indicating that it currently functions as a through roadway.

- **Adjacent land use:** The adjacent land use on Redland Road is inconsistent with the residential road classification, including:

    - Three houses of worship: Shady Grove Presbyterian Church, Derwood Alliance Church, and Inglesia Alianza Derwood

    - Commercial frontage between Muncaster Mill Road and Roslyn Avenue

  Approximately 40 single-family residences have driveway access onto this two-mile long segment of Redland Road.

- **Planned intersection capacity improvement:** The intersection of Redland Road and Needwood Road is forecast to exceed the Derwood Policy Area congestion standard. Increasing the intersection capacity to attain the congestion standard requires extending a through travel lane on Redland Road from Crabbs Branch Way to a point north of the Needwood Road intersection.

The recommended right-of-way for a rural arterial roadway is 80 feet (two lanes with paved shoulders and an open section) and other arterial roadways (four lanes with sidewalks and curb and gutter) have the same right-of-way dimension. The existing right-of-way on Redland Road varies, with most areas adjacent to subdivided properties having a 70-foot right-of-way.

Recommendation

- Reclassify Redland Road as an Arterial roadway (A-42) between Muncaster Mill Road and Crabbs Branch Way, with an 80-foot minimum right-of-way. Between Muncaster Mill Road and Needwood Road, two through travel lanes and an open section are recommended. Between Needwood Road and Crabbs Branch Way, a maximum of four travel lanes is recommended.

- This Plan recognizes the largely residential character of Redland Road, particularly between Needwood Road and Roslyn Avenue. Reclassification of Redland Road does not alter that character and should not be used as a basis for rezoning requests.

Woodfield Road

Woodfield Road (M-21), also known as MD 124, forms the boundary of the Upper Rock Creek and Gaithersburg Vicinity Planning Areas between Muncaster Mill Road and Warfield Road. The 1985 Gaithersburg Vicinity Master Plan recommends four to six lanes on this segment of roadway. The Maryland State Highway Administration (SHA) has completed facility planning for this roadway and found that throughout the project study area, from Midcounty Highway to Warfield Road, a six-lane cross-section would be required to accommodate forecast 2020 travel demand so that intersections would operate within the Montgomery Village/Airpark Policy Area

Redland Road @ Crabbs Branch Way
Intersection Traffic Data

Before Improvements:

	CLV	V/C	LOS
Existing A.M.	1374	0.86	D
Existing P.M.	1648	1.03	F

After Improvements:

Expected A.M.	1218	0.76	C
Expected P.M.	1121	0.70	B

Attachment 4

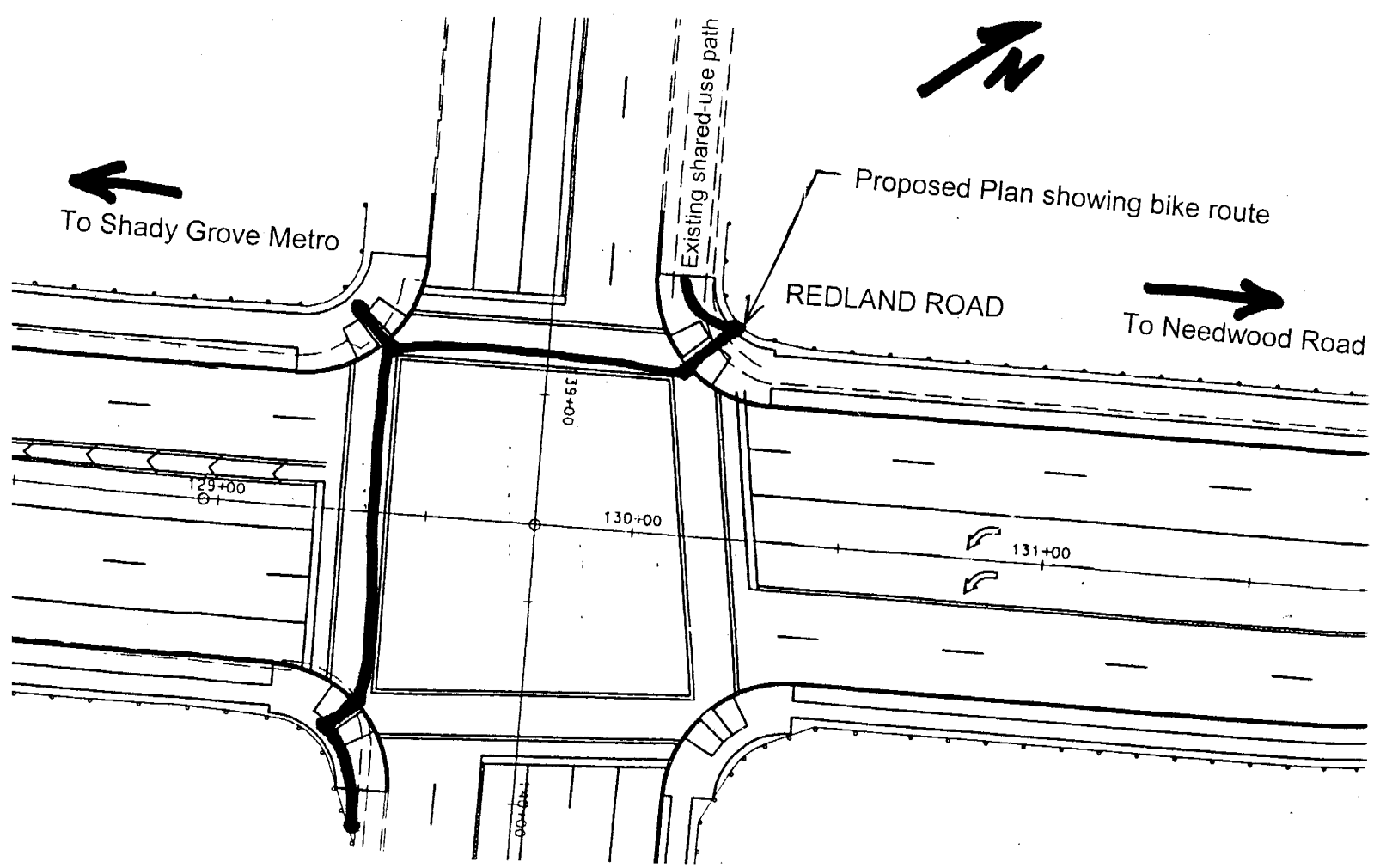
Redland Road @ Needwood Road
Intersection Traffic Data

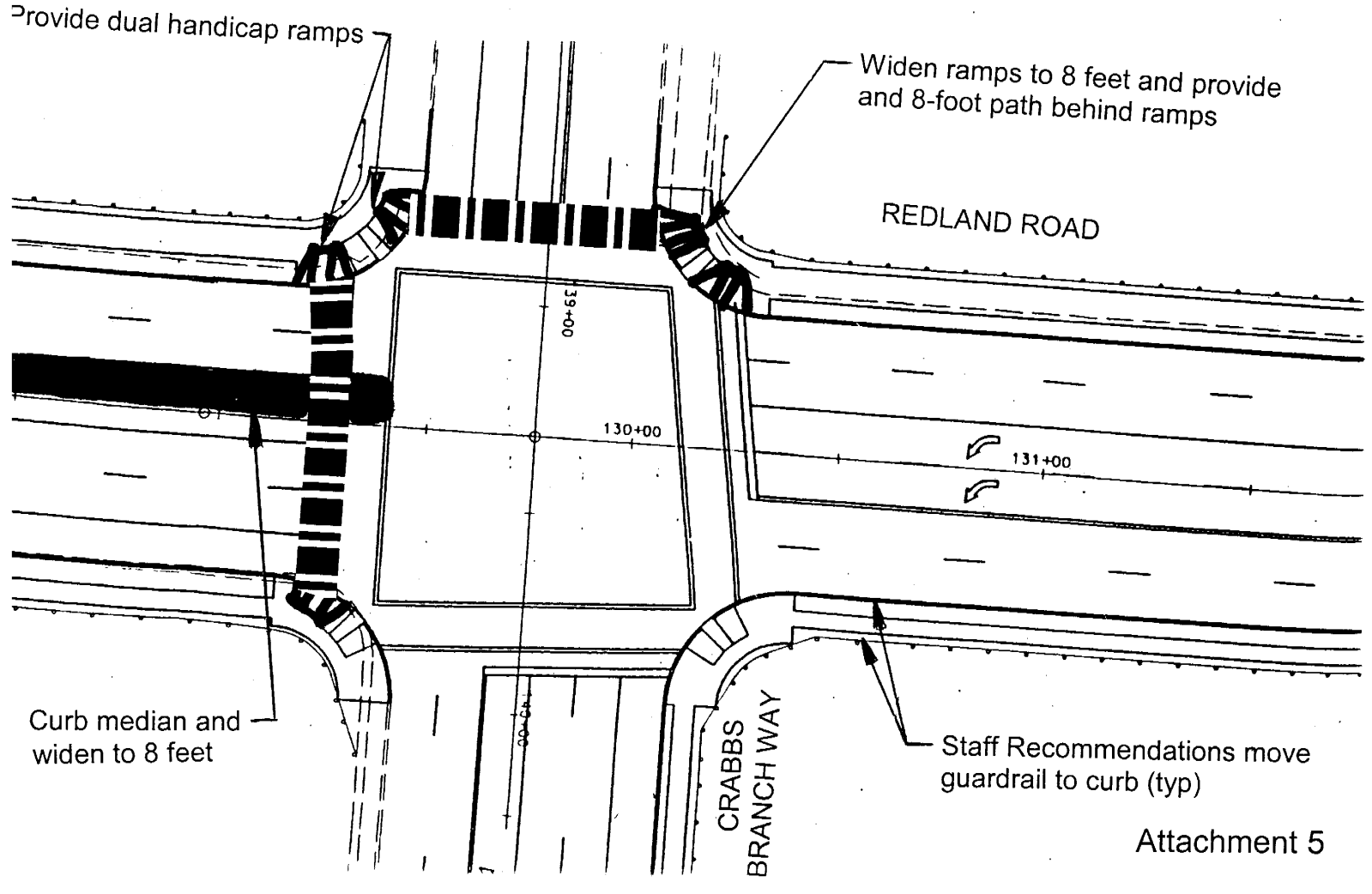
Before Improvements:

	CLV	V/C	LOS
Existing A.M.	1658	1.04	F
Existing P.M.	1544	0.97	E

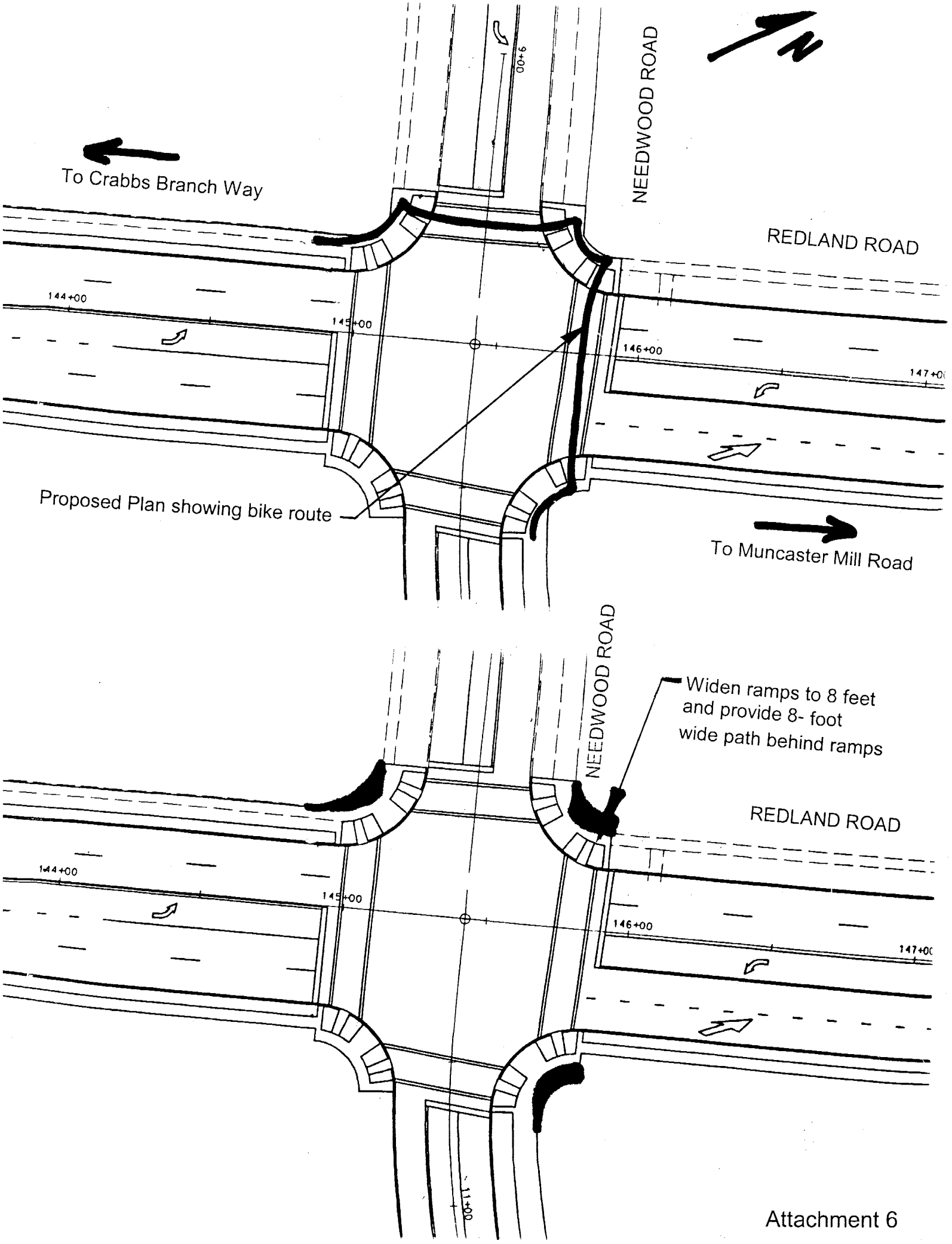
After Improvements:

Expected A.M.	1192	0.75	C
Expected P.M.	1132	0.71	B

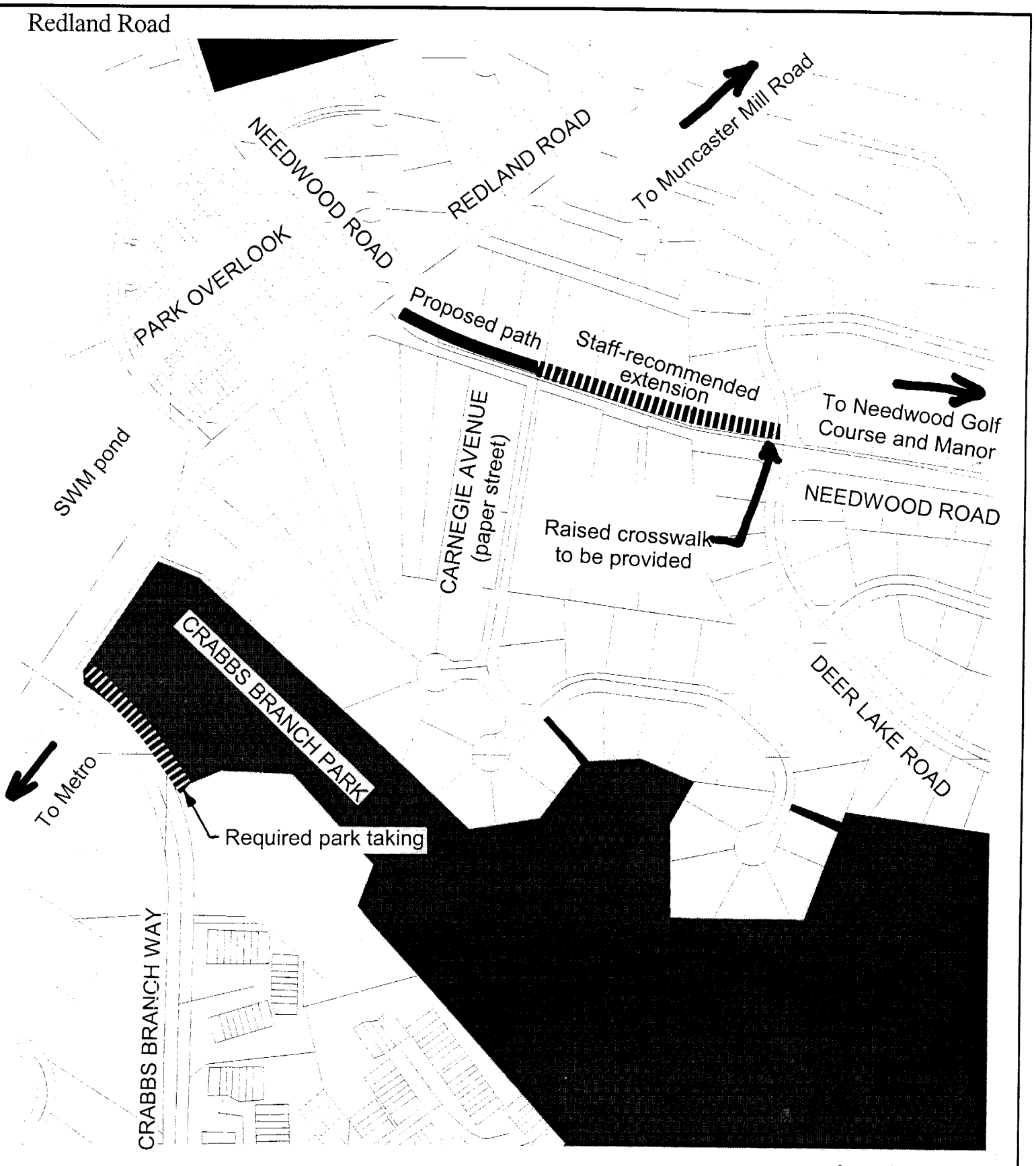




Attachment 5



Attachment 6



Attachment 7

Map Compiled On 12-04-2003 at 01:48 PM
Map Scale: 1 inch = 400 feet or 1:4800

0 400 Feet

The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Park and Planning
Transportation Planning Unit
8787 Georgia Avenue | Silver Spring, Maryland 20910
301.495.4525 voice | 301.495.1302 fax | http://www.mc-mncppc.org

Master Plan of Highways Centerline 2
DPWT DIME 2000 Street Centerlines
MCPPD Planimetric Street Centerlines
All Parks
Existing
Proposed
Property
Montgomery County

N

HIGHWAY SAFETY DESIGN and OPERATIONS GUIDE

1997

AMERICAN ASSOCIATION of STATE
HIGHWAY and TRANSPORTATION OFFICIALS
444 NORTH CAPITOL STREET NW SUITE 249
WASHINGTON, D.C. 20001

Attachment 8

- **Central business districts.** Level-of-service analyses should be conducted according to the methods outlined in the *Highway Capacity Manual*.[5]
- **Commercial/industrial areas outside a central business district.** A minimum width of 1.5 m, with a planting strip of at least 1.2 m or a 2.5-m sidewalk with no planting strip should be planned.
- **Residential areas outside a central business district:**
  - — Arterial and collector streets—A minimum width of 1.5 m is desirable away from the roadway; a 0.6-m separation is the minimum acceptable to prevent vehicles from sideswiping pedestrians.
  - — Local streets—A minimum width of 1.5 m should be planned.

Bridge structures planned to accommodate pedestrian and bicycle traffic on high-speed highways should be designed with a crashworthy bridge rail separating the vehicular from the pedestrian and bicycle traffic and an approved pedestrian/bicycle rail on the outboard side of the walkway. It is often desirable to provide a separate structure to accommodate pedestrian or bicycle traffic, depending on the vehicular traffic pattern and volumes as well as on the configuration of the bridge structure itself.

When a guardrail is located along sections of a roadway that also has a sidewalk, it is desirable to locate the sidewalk at least 1.5 m behind the guardrail. When lateral constraints preclude the 1.5-m clearance, a rub rail on the back side of the guardrail posts at rail level should be used to prevent injury to pedestrians or bicyclists while passing behind the guardrail. Figure 5-5 shows a protective rub rail on the backside of the guardrail adjacent to the sidewalk.

In suburban areas where sidewalks are not provided, their installation is generally beneficial in areas near schools, churches, and any other location where high traffic speeds are combined with high vehicular and pedestrian volumes. Other suburban areas meriting consideration for the installation of sidewalks are those with large numbers of pedestrian trips of known origin-destination points and areas surrounding recreational sites.

It is recommended that paved shoulders at 1.2 m in width be provided on applicable roadways within 8 km of an urban area to accommodate pedestrian and bicycle travel. Along a higher-speed suburban arterial, sidewalks should be provided for pedestrians and additional areas provided for bicyclists. Nonadjacent paths should be considered to provide a reasonable level of safety.

The Americans with Disabilities Act requires that curb ramps be installed at all marked crossings, corners, and any other locations where pedestrian crossings can be predicted (such as midblock crossings). An exception to this requirement is where there is insufficient space to install a properly designed ramp. Ramps should be given a contrasting surface texture to allow the sight-impaired pedestrian to distinguish the curb ramp from the surrounding flat sidewalk surface. There should be no lip at the bottom of the ramp because a lip can impede persons in wheelchairs as they try to climb the ramp. The ramp and corner area must be kept

Figure 5-5. Protective rail on the backside of a guardrail adjacent to the sidewalk.

clean of street furniture such as traffic signals, signal controllers, light poles, signs, or other features. Sidewalks should have a clear, continuous traffic path, which must be kept free of all obstructions such as mailboxes, newspaper vending machines, signs, light poles, or trees.

Roadside Features and Safety Appurtenances

In urban areas, traffic barriers are not usually installed unless there is a potentially dangerous situation, such as a section with steep foreslopes or approaches to overcrossing structures. Application of barriers in urban areas is often restricted by limited right-of-way. Because of these and other confounding factors, individual study of each site is necessary to ensure that trade-offs are made that best suit the public interest.

In areas with sidewalks, the barrier should be placed between the sidewalk and the traveled way to prevent errant vehicles from sliding along the barrier and hitting pedestrians. If a barrier system is needed at an intersection corner, it should not be connected at an angle, as shown in figure 5-6. A curved radius design, as discussed in chapter 4, should be considered. When the primary purpose of the barrier is to protect the occupants of the adjacent land, there may be instances where gaps are required. The barrier should not be terminated with a stand-up blunt end or any other end treatment that may penetrate a vehicle. Short sections of guardrail should not be used around appurtenances or street furniture because they offer little protection to motorists or the appurtenance.

Sometimes a section of guardrail is placed across the top of a T-intersection, such as a local street terminating at a service road. However, if the section is substandard, too short, or unanchored, it will serve little purpose because it will not stop a high-speed vehicle from going through the intersection from the local street, and it is an additional obstacle for a vehicle to hit traveling on the service or other road. Therefore, if used, it must be crashworthy, that is, strong enough to prevent penetration in most expected impacts, and adequately anchored. A crash cushion or arresting device may be appropriate.

For a permanent road closure, a barrier may be used to physically prevent entry into the former road area and to protect errant vehicles from any potentially dangerous roadside conditions. Otherwise, delineation should be used. If a barrier is used, it should be strong enough to prevent penetration. The barrier should have crashworthy end treat-

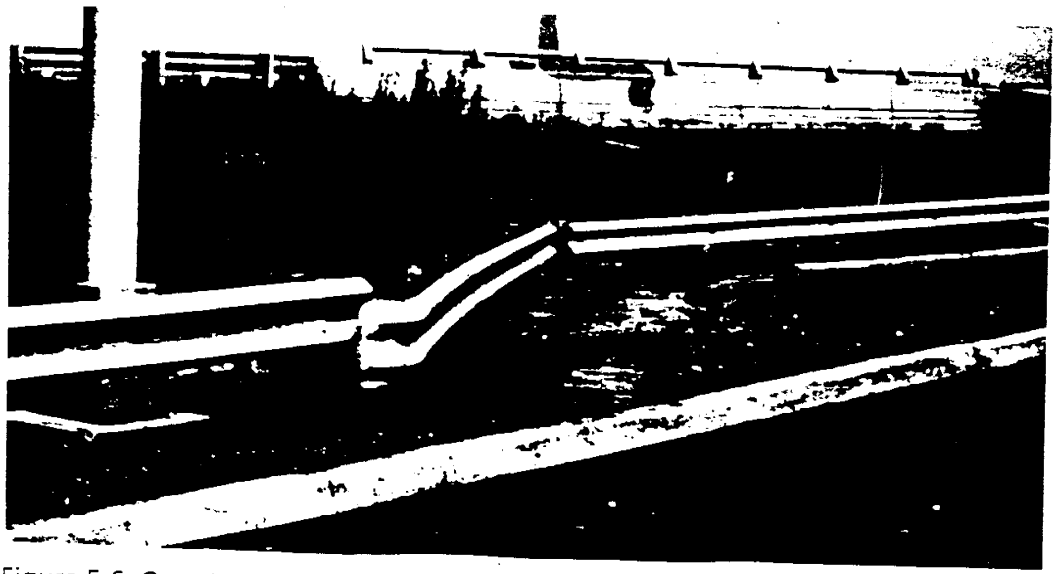


Figure 5-6. Guardrail sections are joined at angles that are too sharp.

Basic design considerations for grade separation structures include the choice of materials and finishes, their durability and maintainability, resistance to vandalism, lighting for security, accessibility for the physically impaired, protective guardrails and screening, and channelization barriers that may be required to encourage use of the separation. Protective screening and enclosures are necessary on overpasses to prevent dropping objects on vehicles below and to prevent climbing on the outside of the structure and possible falls.

Pedestrian and Bicycle Accommodation on Urban Bridges

Pedestrian and bicycle facilities are normally brought closer to vehicular traffic at bridges. For that reason, it is important to separate those facilities from vehicular traffic. On existing structures with no barrier separating vehicular traffic from pedestrians or bikes, such as the one shown in figure 5-13, separation should be provided in conjunction with resurfacing, rehabilitation, or reconstruction (3R) projects. This can frequently be accomplished by constructing a barrier at the sidewalk edge nearest traffic. Figure 5-14 illustrates an appropriate combination of barrier and railing between the roadway and sidewalk or bikeway.

Barrier end treatments for urban structures require special design in the approach areas. Where operating speeds exceed 50 km/h, crashworthy transition and end treatments should be provided. For lower operation speeds, sloped or sloped-and-flared end treatments are acceptable. (See figure 5-15.)

Figure 5-13. Sidewalk on a bridge without a barrier between traffic and pedestrians.

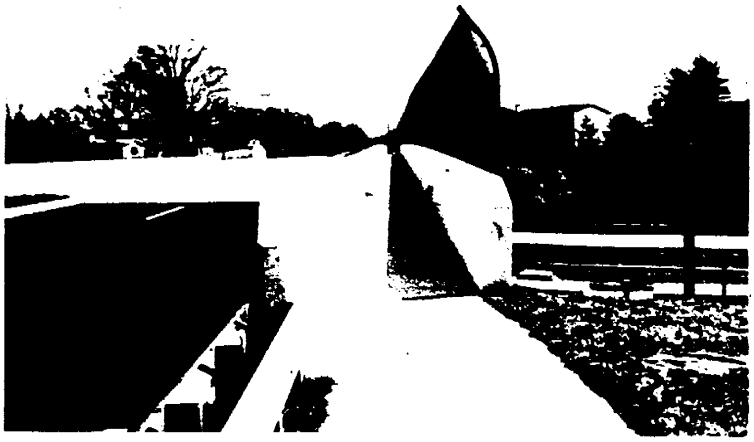


Figure 5-14. Barrier between a roadway and sidewalk.

Figure 5-15. Barrier end treatment for speeds of less than 50 km/h.