A Study of County Road Project Cost and Schedule Estimates

Office of Legislative Oversight
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Executive Summary

This report by the Office of Legislative Oversight responds to the County Council's request to compare initial estimated costs to actual costs, and initial estimated schedules to actual schedules for County road projects. The report also identifies the factors that caused changes from initial estimates.

Overview of Road Project Planning, Design, and Construction Process

The Council identifies the roads and other infrastructure that comprise the County's transportation network through the Master Plan process. The Council initially authorizes work on a potential road project by including it in the Facility Planning project in the Capital Improvements Program (CIP). The goal of Facility Planning is to study the need for the road in the next 20 years, define the scope of the project, and create cost and schedule estimates. Completion of the Facility Planning process for a road takes, on average, 4.5 years. As discussed below, not all road projects complete Facility Planning before becoming a CIP project.

The Executive may propose including a road project as a stand-alone CIP project. The Executive prepares a project description form (PDF) that includes initial project cost and schedule estimates. CIP cost estimates show future year expenditures in constant dollars, that is, without any inflation adjustment. Initial road project cost estimates include contingency funding (to cover unexpected costs) that ranges from 15-40% of total project cost.

If the Council approves a new road project, the Department of Public Works and Transportation (DPWT) then proceeds to the final design stage, which produces detailed drawings, specifications, and plans for project construction. During the final design stage, DPWT applies for needed environmental and land use permits and negotiates with property owners to acquire land for the project.

After completion of the final design stage, DPWT prepares bid documents and works with the County's Office of Procurement to issue a contract solicitation for road construction.

County Road Project Stages

Road Projects Included in OLO's Study

OLO examined changes in the costs and schedules for five recently completed and nine current County road projects. For these 14 projects (listed below), OLO also identified the factors that caused these changes.

Completed Projects	Current Projects	
• Briggs Chaney Road	• Burtonsville Access Road	• Nebel Street Extended
• Germantown Road Extended	• Citadel Avenue	• Redland Road
• Muncaster Road	• Fairland Road	• Stringtown Road Extended
• Shady Grove Road	• Greencastle Road	• Woodfield Road Extended
• Valley Park Drive	• Montrose Parkway West	

Factors that Affect Project Costs and Schedules

OLO identified ten key factors that affected the costs and schedules of the road projects studied. These factors shaped initial project cost and schedule estimates, and explain variations between initial estimates and final project costs and schedules. No single factor represents the primary cause for changes from initial estimates. Different combinations of these factors caused cost increases or delays in the road projects studied in this report.

1. **Project Scope:** The major design elements of a road, including right-of-way length and width, alignment, stormwater management plans, and other features such as bikeways and streetscaping.
2. **Land Acquisition:** Purchase of land for new or expanded rights-of-way or acquisition of easements for access to land during project construction.
3. **Utility Relocation:** Relocation of above- and below-ground utility lines in County rights-of-way.
4. **Laws, Regulations, and Policies:** Federal, State, and County legal, regulatory, and policy requirements that govern road construction.
5. **Environmental Compliance:** Stormwater management, sediment control, wetland preservation, forest conservation, and other environmental requirements.
6. **Surrounding Development:** Existing or planned development in and adjacent to road projects.
7. **Nearby Road Projects:** Other ongoing or planned transportation improvements in the vicinity of a County road project.
8. **Cost Increases/Inflation:** Cost increases due to inflation and changing market conditions.
9. **Fiscal Conditions:** The availability of funding to complete the project given finite resources and other competing needs.
10. **Procurement Process:** The time needed to complete the procurement process and the possible occurrence of procurement-related delays, such as delays resulting from a bid protest.

DPWT bases initial project cost and schedule estimates on information known about these factors when the Department prepares the first project PDF. At that time, DPWT has not yet prepared final project design specifications. Moreover, Federal, State, and County agencies have not yet issued final permitting requirements for the project. Engineering, design, and permitting work conducted after the creation of a project helps DPWT refine project cost and schedule estimates in subsequent PDFs.

Variations from the initial project cost and schedule result either from shortcomings in the estimation process or from decisions and information that were not known to DPWT at the project's outset. "Not knowable" information includes project details and specifications produced during final design; decisions and events that occur after creation of the CIP project; and conditions and externalities that are beyond the control or influence of the County Government.

The table on the following page lists examples of the types of information that are knowable at the time of the initial cost and schedule estimates, and the types of information that are not knowable until later. A more complete list of this information for each of the ten factors listed above is included on page 79 of the report.

	Information Knowable at Time of Initial Cost Estimate	*Information Not Knowable at Time of Initial Cost Estimate*
Project Scope	• Project scope resulting from preliminary planning, design, and engineering work	• Final design specifications • Scope changes approved after creation of stand-alone CIP project
Land Acquisition	• Approximate amount of land needed for right-of-way and easements • Estimated value of land	• Exact amount of land needed for right-of-way and easements • Willingness of property owners to sell • Changing real estate market values
Utility Relocation	• Locations of all recorded above- and below-ground utilities in the project area	• Locations of unrecorded below-ground utilities
Environmental Compliance	• Impact of project on water quality, forests, and other environmental conditions • Environmental management and mitigation plans	• Exact permitting requirements of regulatory agencies • Environmental requirements resulting from changes in project scope

Changes in Project Cost Estimates

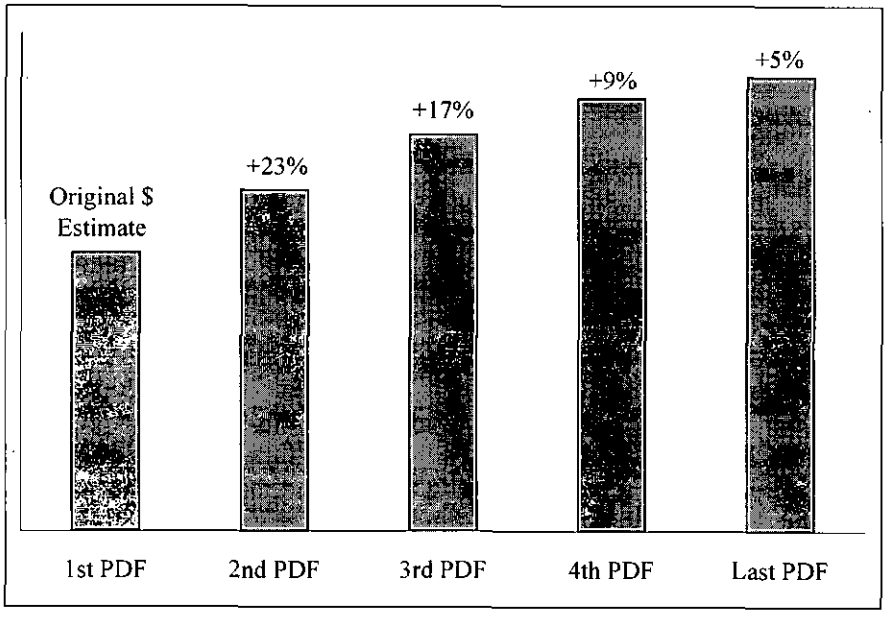
The 14 road projects reviewed experienced an average (mean) cost increase of 54%; when adjusted for inflation, the average increase was 42%. Because this calculation includes currently unfinished projects, the actual average cost variations for the 14 projects likely will be higher when final costs are known.

Average Percent Increase of Road Project Costs over Life of Project

Average	Constant Dollars	Adjusted for Inflation
Mean	**54%**	**42%**
Median	**35%**	**24%**

Most projects experienced the greatest cost increases in the early years with increases moderating in the final years of the project. The chart below shows the average cost increase from one PDF to the next.

Average Percent Cost Increase between Road Project Estimates (Constant $)



Changes in Estimated Project Duration

The County road projects examined by OLO experienced an average delay of 2.8 years beyond their initial schedules. The increase in project duration was primarily due to delays occurring during the design (i.e., pre-construction) stage, which increased by 2.1 years on average, while the construction stage increased by an average of 0.7 years over initial estimates.

Variations in Road Project Duration from Initial Estimate

	Years
Average Duration - Initial Estimate	4.7
Average Duration - Actual	7.5
Average Delay (Actual – Initial)	**2.8**

Because this study includes nine projects that are still in progress and may experience additional delays, the actual duration of these projects may exceed the number shown above.

Correlation between Facility Planning and Accuracy of Cost and Schedule Estimates

Of the 14 projects studied, seven had completed Facility Planning before their approval as a stand-alone CIP project; the other seven had not completed Facility Planning before entering the CIP. OLO found that projects that completed Facility Planning had notably more accurate initial cost and schedule estimates than projects that did not complete Facility Planning. Specifically, while projects that completed Facility Planning experienced an average cost increase of 28%, CIP projects that did not complete Facility Planning experienced an average cost increase of 80%. When adjusted for inflation, the comparison was 12% to 72%.

Average Percent Increase in Road Project Cost from Initial Estimate

	All Projects	Projects that had:	
		Completed Facility Planning	Not Completed Facility Planning
Average Cost Increase (Constant dollars)	**54%**	**28%**	**80%**
Average Cost Increase (Adjusted for inflation)	**42%**	**12%**	**72%**

A similar outcome occurs when comparing schedule delays of projects that did and did not complete Facility Planning. Projects that did not complete Facility Planning experienced an average delay of 3.4 years, more than one year longer than projects that completed Facility Planning.

Average Road Project Delay beyond Initial Estimate

	All Projects	Projects that had:	
		Completed Facility Planning	Not Completed Facility Planning
Average Delay beyond Initial Schedule	**2.8 years**	**2.1 years**	**3.4 years**

Practices in other Jurisdictions

OLO identified three capital project management practices from other jurisdictions that may be of interest to the Council in its oversight of the County's capital program.

- **Risk-Based Cost and Schedule Estimation:** The Washington State Department of Transportation (WSDOT) prepares "risk-based" cost and schedule estimates that describe the potential variability in project outcomes. WSDOT assumes that the ultimate cost and schedule of a project is subject to many variables that cannot be known during the planning stage. WSDOT reports project cost and schedule ranges based on the probability of different variables occurring.

- **Constructability Reviews:** In several states, highway departments provide road project design documents to private sector construction contractors for review. In these "constructability reviews," construction experts evaluate project design to identify errors and omissions and to suggest design revisions that could improve the end product, reduce costs, or save time.

- **Design-Build Contracting:** In design-build contracting, a government enters into a single contract for both the design and construction of a capital project. Design-build contracts may shorten project duration by allowing some overlap of the design and construction phases and may prevent unexpected cost increases and delays by requiring the contractor to assume the financial risk for some changes in project design.

Recommended Discussion Items

OLO recommends that the Council discuss four issues with the Executive Branch:

Issue #1: Council expectations regarding CIP road project cost and schedule estimates.

The Council should communicate to the Executive its expectations regarding the contingency funding, inflation assumptions, and risk assessments in CIP project cost and schedule estimates.

Issue #2: The transition of road projects from Facility Planning to the CIP.

Among the roads studied, projects that completed Facility Planning had more accurate cost and schedule estimates than those that had not gone through Facility Planning. Councilmembers should consider under what circumstances, if any, they should approve a new CIP road project that has not yet completed Facility Planning.

Issue #3: Alternative contracting strategies to minimize risk, control costs, and avoid delays.

The Council should consider the advantages and disadvantages of alternative contracting strategies including greater use of incentives or penalties, the use of constructability reviews, and the piloting of design-build contracts.

Issue #4: Consistency of funding approach for environmental costs resulting from road construction.

The Council should consider whether spending for environmental mitigation of road construction should be included in project-specific PDFs or should be funded through separate program-specific PDFs.

A STUDY OF COUNTY ROAD PROJECT COST AND SCHEDULE ESTIMATES

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LIST OF TABLES

LIST OF EXHIBITS

CHAPTER I. AUTHORITY, SCOPE, AND ORGANIZATION OF REPORT

A. Authority

Council Resolution 16-260, *FY 2008 Work Program of the Office of Legislative Oversight,* adopted July 31, 2007.

B. Purpose and Scope of Report

This report by the Office of Legislative Oversight responds to the County Council's request to compare initial estimated costs to actual costs, and initial estimated schedules to actual schedules for County road projects. The purpose of this review is to enhance the Council's evaluation of proposed road project costs and schedules, and to increase understanding of why project costs increase and schedules get delayed. Specifically, the Council asked OLO to:

- Examine how Executive Branch staff develop initial cost estimates and schedules of County road projects;
- Compare actual costs to initial estimates, and actual schedules to the initial schedule presented in the CIP; and,
- Identify the factors that caused actual road project costs to exceed earlier estimates and schedule delays to occur.

C. Organization of Report

Chapter II, Overview of Road Project Planning and Implementation, describes the stages a road project goes through from start to finish and the agencies involved.

Chapter III, Project Selection Criteria and Data Sources, describes the criteria used to select projects for study and describes the data sources for cost and schedule estimates.

Chapter IV, Survey of Recently Completed Road Projects, provides project summaries and data sheets with cost and schedule information for five recently completed road projects.

Chapter V, Survey of Current County Road Projects, provides project summaries and data sheets with cost and schedule information for nine current road projects.

Chapter VI, Road Project Practices in Other Jurisdictions, describes three road project estimation and management practices adopted in other jurisdictions.

Chapter VII presents OLO's **Findings** from the survey of County road projects.

Chapter VIII presents OLO's **Recommended Discussion Issues** for the Council.

Chapter IX presents **Agency Comments** received on a final draft of this report.

D. Methodology

Office of Legislative Oversight staff members Aron Trombka and Sarah Downie conducted this study. OLO gathered information through examination of budget documents, financial reports, and monthly transportation project status reports. OLO held a series of meetings with the Department of Public Works and Transportation management and staff familiar with the projects studied in this report. In addition, OLO received information from staff in the Department of Finance and the Office of Management and Budget (OMB).

E. Acknowledgements

OLO received a high level of cooperation from everyone involved in this study. OLO owes a special thanks to staff in the Department of Public Works and Transportation (DPWT) for responding to OLO's many information requests.

Below are the names of individuals with whom OLO consulted during the course of conducting this study. We greatly appreciate the information shared and the insights provided by all individuals who participated, listed alphabetically below.

- John Brennan, State Department of Assessment and Taxation
- Tim Cupples, DPWT
- Angela Dizelos, OMB
- Alison Dollar, OMB
- Edgar Gonzalez, DPWT
- William Gries, M-NCPPC
- Arthur Holmes, Jr., DPWT
- Jon Hutchings, DPWT
- Gary Johnson, DPWT
- Bruce Johnston, DPWT
- Kenneth Kendall, DPWT
- Gerald McCauley, DPWT
- Michael Mitchell, DPWT
- Stephen O'Malley, Finance
- Eddie Noyes, M-NCPPC
- Thomas Reise, DPWT
- Al Roshdieh, DPWT
- John Schlee, M-NCPPC
- Sogand Seirafi, DPWT
- Holger Serrano, DPWT
- Daniel Sheridan, DPWT
- Danielle Snowden, Finance
- Thomas Street, Office of the County Executive

In addition, OLO acknowledges the valuable information and assistance provided by Glenn Orlin of County Council staff.

CHAPTER II. OVERVIEW OF ROAD PROJECT PLANNING AND IMPLEMENTATION

This chapter provides an overview of the stages of a road project from planning through construction:

Section A, **The Department of Public Works and Transportation**, provides an overview of DPWT's role in road project planning, design, and construction.

Section B, **Facility Planning Process**, describes the Facility Planning process, which is the first stage of road project implementation.

Section C, **Creation of Project Description Form/Inclusion in Capital Improvements Program**, describes how a road transitions from Facility Planning to becoming a stand-alone project in the CIP.

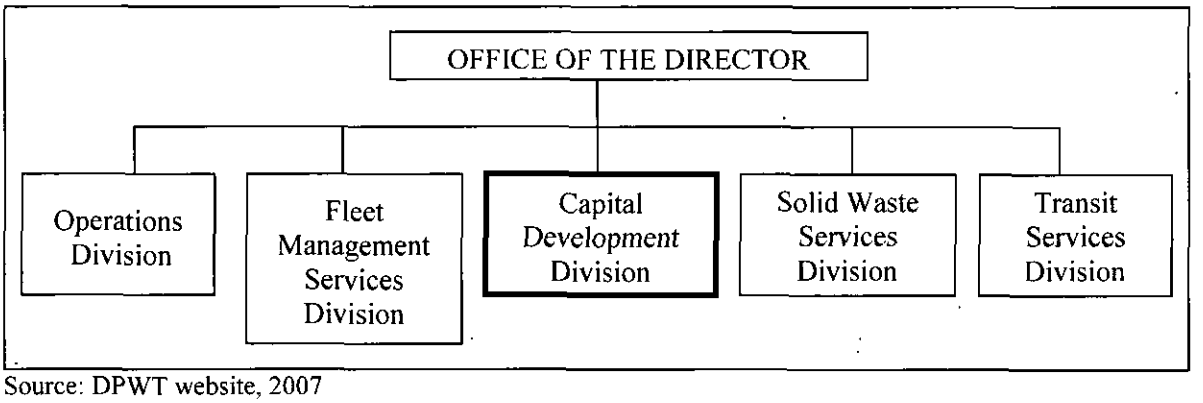
Section D, **Final Design, Land Acquisition, and Construction,** describes the final stages of a road project.

Section E, **Other Agencies Involved in Road Projects**, describes the agencies that DPWT must coordinate with throughout the planning, design, and construction of a road project.

A. The Department of Public Works and Transportation

DPWT's Capital Development Division is responsible for the Facility Planning, design, and construction of County roads and other transportation infrastructure. The Division also oversees the design and construction of County Government building facilities. For most road projects, DPWT contracts with separate firms for project planning/design and project construction. DPWT staff oversee and manage the planning, design, land acquisition, and construction phases of road projects. Exhibit 1 shows the location of the Capital Development Division within DPWT's organizational chart.

Exhibit 1:
Department of Public Works and Transportation (DPWT) Organizational Chart[1]



Source: DPWT website, 2007

[1] In December 2007, the Executive announced plans to reorganize DPWT effective in FY09.

B. Facility Planning Process

The County Planning Board develops and the County Council approves Master Plans for specific areas of the County, which describe the development goals for that area and recommend road and other projects. The County Code requires that roads "be classified as designated in the applicable master or sector plan."[2]

The Facility Planning process serves as a transition between identification of a potential road project and its inclusion as a stand-alone project in the CIP. The goal of Facility Planning is to study the need for the road, define the scope of the project, and create a cost and schedule estimate based on the information gathered.

The Facility Planning process was created in 1993 to provide decision-makers with better information to help them decide whether to fund a road project. Before the institution of Facility Planning, Montgomery County included funding for stand-alone road construction projects in the CIP without completing any of the design process.[3]

The Executive, through a consultation process with agencies inside and outside the Executive Branch, recommends a selection of projects for inclusion in the Project Description Form (PDF) that funds Facility Planning for transportation projects. The Council then approves, modifies, or disapproves the PDF. Facility Planning consists of two phases: conceptual planning and preliminary design.

1. Phase I (Conceptual Planning)

The purpose of Phase I of Facility Planning is to determine project need and features. The process begins with a collection of background data in the project area to determine the existing conditions and planned future development that would affect the transportation need now or within the 20 year span of the study. DPWT performs travel demand forecasting to determine average daily traffic volumes, peak period traffic volumes, and turning movements for the current year and for after project completion.

Next, DPWT evaluates whether current or future conditions in the study area indicate a need for improvement within the timeframe of the study, and if so, whether the project under study will serve this purpose. DPWT also determines whether there are environmental or social conditions that would preclude the construction of the project in the current regulatory environment. Even if study results indicate that a road is not needed in the next 20 years, the project remains in the Master Plan and may be built in the future.

DPWT develops alternative horizontal and vertical alignments and roadway cross-sections and identifies the design options that best meet the need and purpose of the proposed project. DPWT and its contractors apply horizontal and vertical alignments to the study corridor to

[2] Montgomery County Code § 49-31.

[3] *An Analysis of the Facility Planning Process for Road Construction.* Office of Legislative Oversight Report Number 2003-1. January 21, 2003.

produce project concept plans. The concept plans are used to investigate preliminary impacts such as future traffic operations, environmental, community, noise, and historical impacts. The concept plans also serve as a guide during Phase II of Facility Planning if the project continues beyond Phase I. If the selected alternative does not conform to the Master Plan, an amendment to the Master Plan would be necessary before the project could move forward.

A project prospectus describes the above activities and their findings. At this stage, the public has the opportunity to review the project prospectus and provide comments. After reviewing the project prospectus and community comments, the DPWT Director decides whether to move the project to Phase II of Facility Planning.

2. Phase II (Preliminary Design)

The second phase of Facility Planning is the preliminary engineering design work for the project. Preliminary engineering involves the following tasks:

- Developing horizontal and vertical roadway alignments;
- Developing concepts for the project design;
- Developing a stormwater management concept plan and a sediment control plan;
- Determining environmental impacts and required mitigation measures;
- Evaluating the need for noise mitigation measures;
- Determining the extent and estimated cost of utility relocation;
- Estimating the approximate amount and cost of land needed to construct the project; and
- Determining a construction sequence for phasing construction activities and completing an interim traffic control plan.

Multiple outside agencies and other County Government departments perform preliminary review of project plans during the Facility Planning stage to assure that the road design meets regulatory and permitting requirements in anticipation of the permitting process during final design. DPWT also presents project plans to the Council's Transportation and Environment Committee for review and comment.

OLO found that projects complete the Facility Planning process, on average, in about four-and-a-half years. The amount of time taken to complete Facility Planning is a function of both the complexity of the project and the availability of staff resources. In addition to managing road projects, DPWT Capital Development Division staff oversee other transportation and non-transportation projects and respond to special projects (such as working on revisions to the County Road Code) requested by the Executive, the Department Director, and the Council.

C. Creation of Project Description Form/Inclusion in Capital Improvements Program

Following the completion of Facility Planning, the Executive may propose including a road project as a stand-alone project in the County's Capital Improvements Program (CIP). (In some instances, the Executive has prepared an initial project PDF before the completion of Facility Planning, either at his own initiative or at the request of the Council.) The Executive prepares a Project Description Form (PDF) that includes information about the project including:

- Expenditure Schedule: Estimated project spending by category for the upcoming six fiscal years. Consistent with Office of Management and Budget (OMB) policy for all projects in the CIP, DPWT estimates all future year expenditures in constant dollars, that is, without any inflation adjustment.[4] The expenditure schedule also provides the estimated timetable for project completion.
- Funding Schedule: Estimated project funding sources for the upcoming six fiscal years.
- Description/Justification: Written overview of the scope of the project and the policies, plans, and studies that provide justification for the project.
- Cost Changes: Explanation of changes in project costs as compared to the previous approved project PDF.
- Status: Description of the current stage of progress toward project completion.
- Appropriation Table: Information on original, current year, and cumulative capital budget appropriations for the project.

In preparing the original project cost and schedule estimates, DPWT considers variables such as:

- final design needs;
- the amount of land to be acquired;
- grading requirements;
- the need to relocate existing utilities;
- street lighting, traffic signal, and signage requirements;
- the width and linear feet of roadways, bikeways, and sidewalks;
- drainage and stormwater management requirements;
- wetland and reforestation requirements; and,
- landscaping requirements.

For each of the above variables, DPWT determines the approximate quantities and unit costs for labor, materials, consulting, and supervision based on past experience and current market conditions. DPWT also considers past project experience and the unique characteristics of the pending project to determine an estimated project schedule. Based on these

[4] OMB estimates the effect of inflation aggregated for all programmed expenditures in the six-year CIP. This information appears in an interagency expenditure summary in the beginning of the CIP document.

determinations, DPWT prepares cost and schedule estimates for inclusion in a proposed initial project PDF.

In preparing initial project cost estimates, DPWT includes contingency funding to cover unexpected costs (but not to account for inflation). The amount of the contingency generally ranges between 15% and 40% of total project cost. Smaller and/or more complex projects often include higher percent contingencies.

The Council holds a public hearing on the Executive's recommended CIP (or CIP amendments). The Council holds worksessions and votes to approve creation or continuation of CIP projects. The Council also appropriates capital budget funds by project for the upcoming fiscal year.[5] If the Council approves creation of a road project as a new stand-alone PDF in the CIP, then DPWT begins work on the final design of the project. Over the life of the project, the Council also appropriates funds for project supervision, land acquisition, and construction.[6]

D. Final Design, Land Acquisition, and Construction

After the Council approves and funds a new CIP project, DPWT proceeds to the final design, land acquisition, and construction stages of the project.

1. Final Design

The "final design" stage produces detailed drawings, specifications, and plans for construction of all elements of a road project. The length of time necessary to perform final design varies depending on the size and complexity of the project. Relatively small projects may require about one year for final design while larger projects may require several years of final design work.

During the final design stage, the County applies for needed environmental and land use permits and regulatory agencies review the project. Federal, State, and County regulatory agencies have the authority to request changes in project design to avoid or mitigate environmental or other impacts of the road improvements. DPWT cannot begin construction until the County obtains the necessary permits and the land necessary to implement permit conditions.

DPWT works with utility companies throughout the design process. During final design, DPWT gives project plans to utility companies to help them develop utility relocation plans.

[5] The Council may appropriate funding for the current fiscal year when approving a mid-year supplemental appropriation.

[6] Appendix A contains copies of the first and last PDFs for each project described in Chapters IV and V.

2. Land Acquisition

During and following final design, DPWT negotiates with property owners to acquire land for the project. For roads in newly created rights-of-way, the County sometimes acquires multiple whole parcels of land. Most commonly, the County acquires portions of property at the edges of the project area. For some projects, the County also acquires "perpetual easements" to preserve permanent access to land and "temporary easements" to access and use land for a finite period of time during project construction.

The County negotiates with property owners to determine the compensation for land acquired for a road project. Maryland law authorizes the County under certain circumstances to acquire land for public road improvements before reaching a compensation agreement with the property owner. With authorization from the Council, the County Government has used the "Advanced Taking" process to condemn land to allow road projects to proceed while awaiting final determination of the compensation amount.

For most projects, DPWT does not begin construction until the County has acquired the entire right-of-way.

3. Construction

After the completion of final design and land acquisition, DPWT prepares bid documents for award of the construction contract. Working with the County's Office of Procurement, DPWT issues a contract solicitation that includes detailed construction specifications and contract terms. After award of the contract, the County issues a notice to proceed and construction work begins.

DPWT road construction contracts commonly contain financial penalties for late completion of work. On one occasion, a County transportation contract included financial incentives for early completion of work.[7]

DPWT supervises and inspects contracted construction work to ensure that the project meets construction standards and project specifications. Upon completion of construction, DPWT performs a final inspection before the roadway is opened for public access. DPWT monitors the project for a minimum of one year after construction completion to assure proper performance of transportation and environmental features.

Chapter VII presents data on the average amount of time taken to complete the final design, land acquisition, and construction of a County road project. As mentioned above, the duration of a CIP project is a function of both the complexity of the work and the availability of staff resources.

[7] The contract for the White's Ferry Road Bridge Replacement project constructed in FY99 included incentives for early completion.

E. Other Agencies Involved in Road Projects

To ensure that road projects comply with environmental regulations and meet permitting requirements, DPWT works with several other agencies and departments during the Facility Planning and design process, including:

- **Inter-Agency Wetlands Committee** was created on DPWT's initiative in the late 1990s to minimize conflicting requirements from environmental regulatory agencies. The ad hoc committee provides guidance to DPWT for projects that affect wetlands, surface water, groundwater, and other aquatic resources. The Committee includes representatives from:
  - Department of Permitting Services
  - Department of Environmental Protection
  - Maryland-National Capital Park and Planning Commission
  - Maryland Department of the Environment
  - Maryland Department of Natural Resources
  - U.S. Army Corps of Engineers
  - Washington Suburban Sanitary Commission
- **Montgomery County Department of Permitting Services (DPS)** issues stormwater and sediment control permit and floodplain district permits.
- **Maryland-National Capital Park and Planning Commission (M-NCPPC)** approves Forest Conservation Plans and issues permits for projects that impact parkland. This agency develops the master plan alignments for projects, participates in Facility Planning, and conducts the Mandatory Referral for all road projects.
- **Montgomery County Historic Preservation Commission.** DPWT coordinates with and may need approvals from this agency when potentially (or already designated) historic properties are located in a road project's right-of-way.
- **Maryland Historic Trust** reviews projects receiving Federal or State funding or requiring Federal or State permits for their impact on historic assets.
- **Maryland Department of the Environment (MDE)** regulates and issues permits for any project that impacts the State's waterways, wetlands, and floodplains.
- **U.S. Army Corps of Engineers (Corps).** Along with MDE, the Corps issues permits for projects that impact the aquatic environment. For projects with significant wetland impacts (typically more than one acre), the Corps may require extensive NEPA documentation and involve other Federal agencies in the process.
- **Maryland Department of Natural Resources (DNR)** requires permits for road projects that have ecological impacts.
- **Utility Companies** (e.g., Verizon, PEPCO, BG&E, Allegheny Power, Washington Suburban Sanitary Commission, Washington Gas, Comcast) coordinate with DPWT to relocate utilities in road project rights-of-way.
- **Maryland State Highway Administration (SHA)** issues permits for County road projects that intersect with State roads or are adjacent to ongoing State road projects.

CHAPTER III. PROJECT SELECTION CRITERIA AND DATA SOURCES

This chapter describes the criteria OLO used to select road projects for study. The chapter also describes the data sources used for cost and schedule estimates presented in this report. This chapter consists of three sections:

Section A, **Project Selection Criteria Study,** describes the criteria established by OLO to identify projects studied in this report.

Section B, **Selected Road Projects**, identifies the projects selected by OLO for study in this report.

Section C, **Data Sources,** describes which documents OLO used as sources for cost and schedule estimates presented in this report.

A. Project Selection Criteria

As outlined in Chapter I, the purpose of this report is to increase understanding of road project cost and schedule estimates and why they may change throughout the course of a project. To accomplish this assignment, OLO sought to examine the history of recent County road projects. OLO established the following criteria to select the road projects to study:

- **Primarily Road Construction**: The scope of the project primarily involves roadway construction. While the project may include features such as intersection improvements, bikeway and sidewalk construction, and streetscaping, these features are supplemental to roadway construction and are not the central element of the project.
- **County Funded:** The primary funding source for the project is County revenues (and not, for example, State funds or private contributions).
- **Stand-Alone CIP Project**: The Council approved the project as an independent project within the Capital Improvements Program (CIP).
- **Created within the Last Decade**: The project first appeared in the CIP as a stand-alone project in FY99 or later.
- **Scheduled for Construction:** When the project first appeared in the CIP, the construction phase of the project was scheduled to begin between FY01 and FY07.
- **Minimum Project Cost:** The final project appropriation exceeds $3 million.

B. Selected Road Projects

By applying the project selection criteria listed above, OLO identified 14 County road construction projects for study. As shown in the box below, five of these projects are complete and open to traffic.

Completed County Road Projects Studied in this Report

1. Briggs Chaney Road
2. Germantown Road Extended
3. Muncaster Road
4. Shady Grove Road
5. Valley Park Drive

Chapter IV contains detailed descriptions of these five completed road projects.

In addition, OLO identified nine current County road projects for study based on the selection criteria. Each of these projects was created as a stand-alone PDF between FY01 and FY05 but has yet to be completed.

Current County Road Projects Studied in this Report

1. Burtonsville Access Road
2. Citadel Avenue
3. Fairland Road
4. Greencastle Road
5. Montrose Parkway West
6. Nebel Street Extended
7. Redland Road
8. Stringtown Road Extended
9. Woodfield Road Extended

Chapter V contains detailed descriptions of these nine current road projects.

Maps showing the locations of the 14 road projects studied in this report appear in Exhibits 2 – 6 on the following pages.

Exhibit 2: Recent County Road Projects - Damascus Area

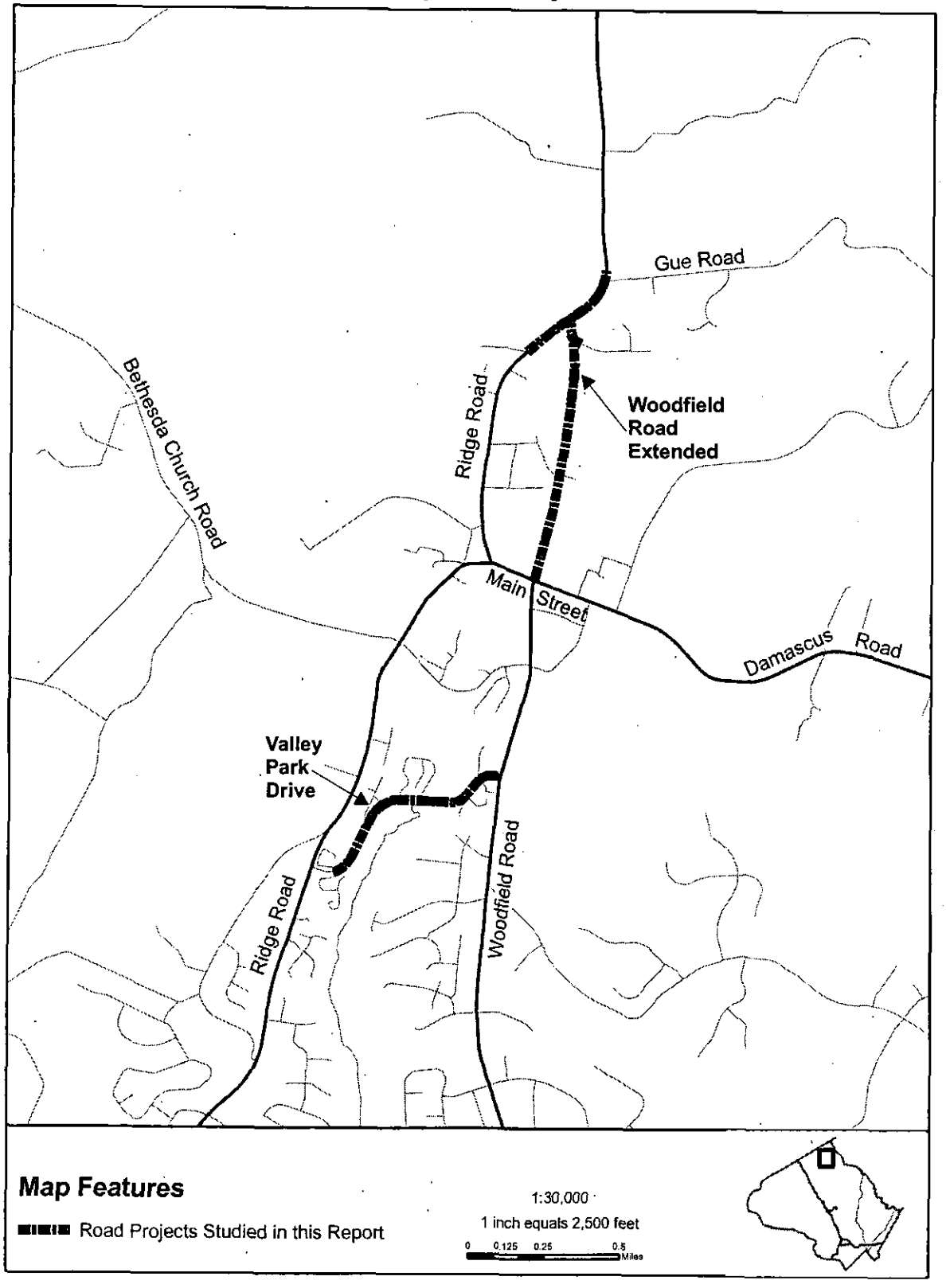


Exhibit 3: Recent County Road Projects - Upper I-270

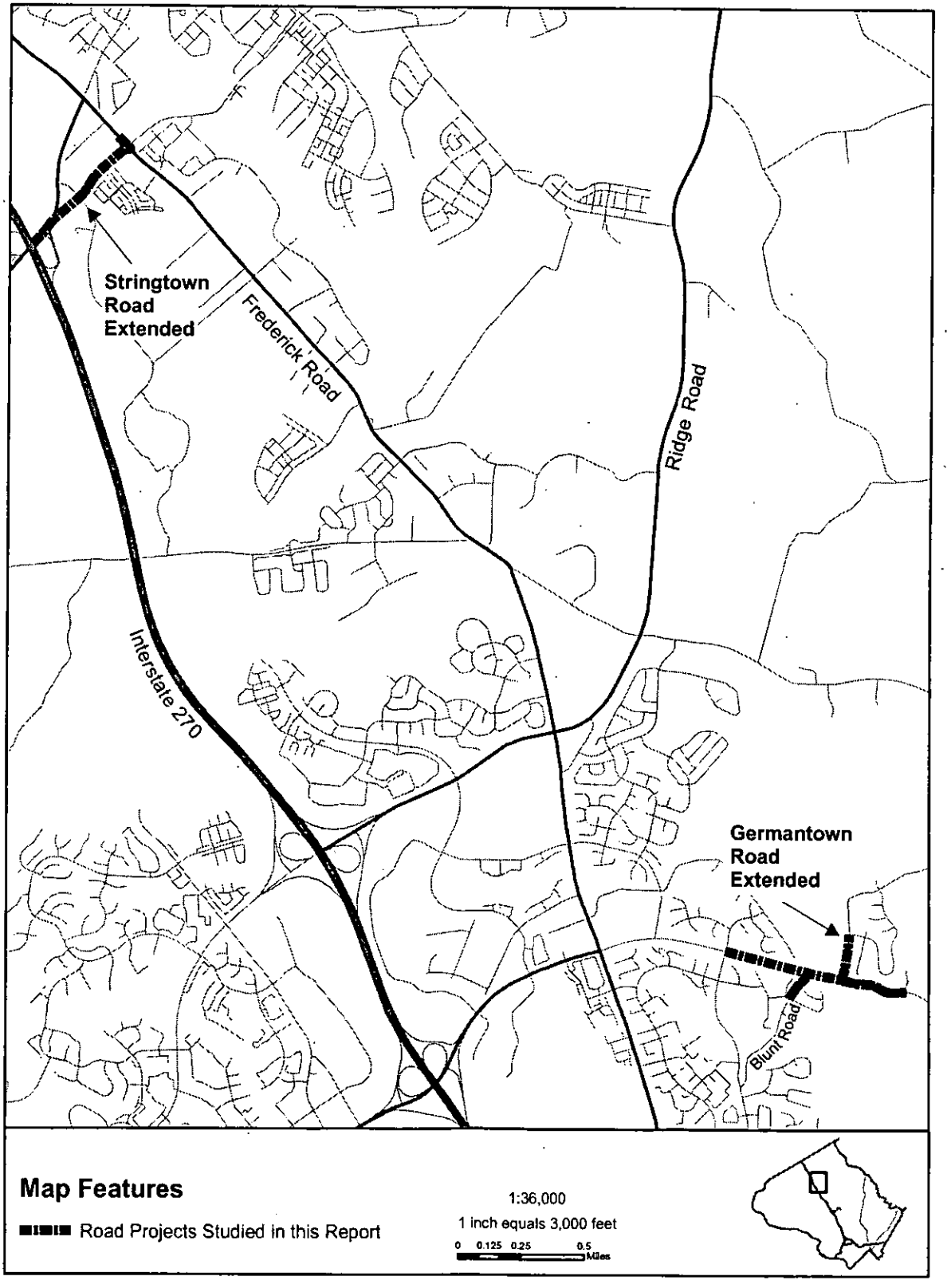


Exhibit 4: Recent County Road Projects- Derwood Area

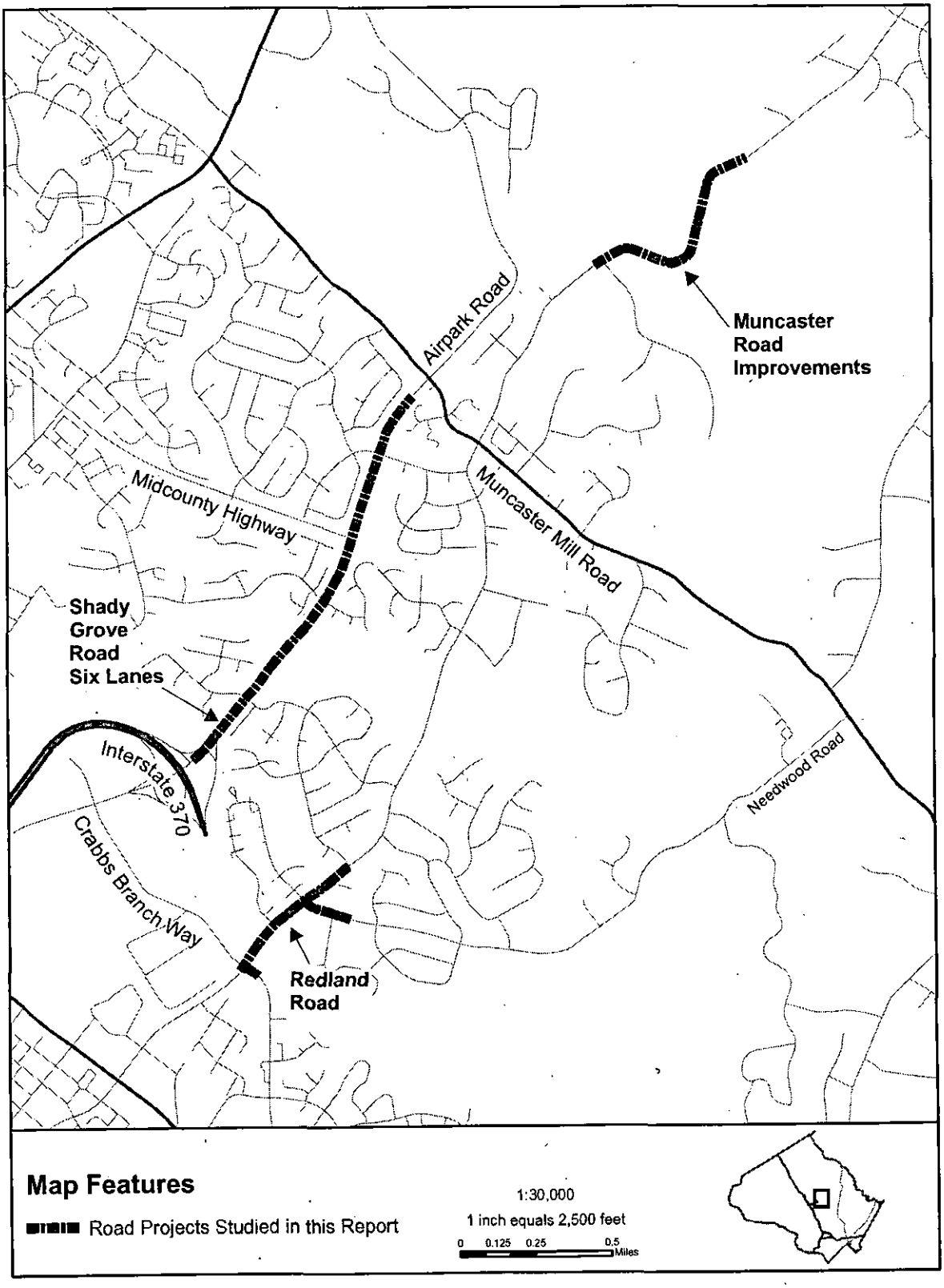


Exhibit 5: Recent County Road Projects - North Bethesda

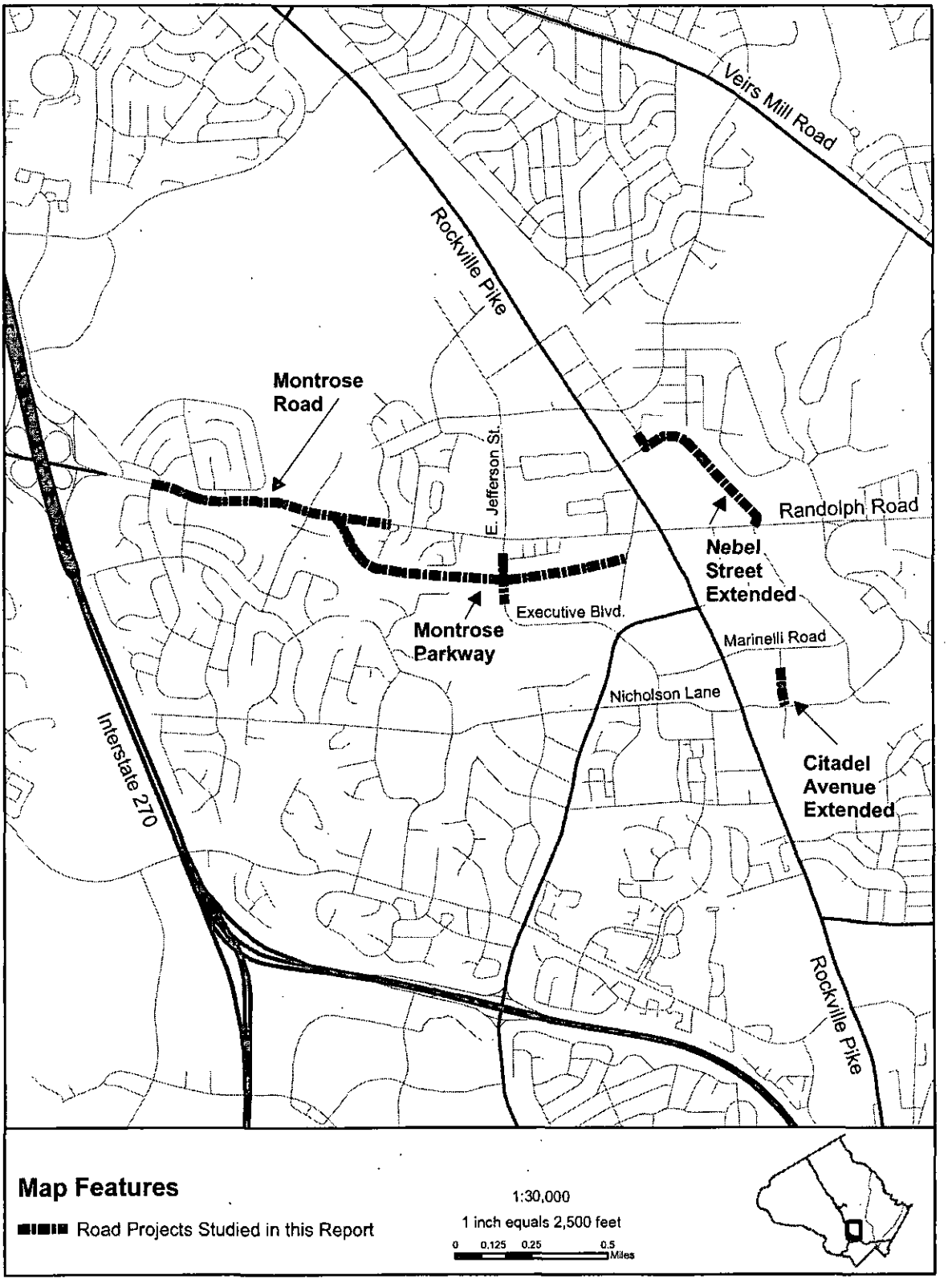
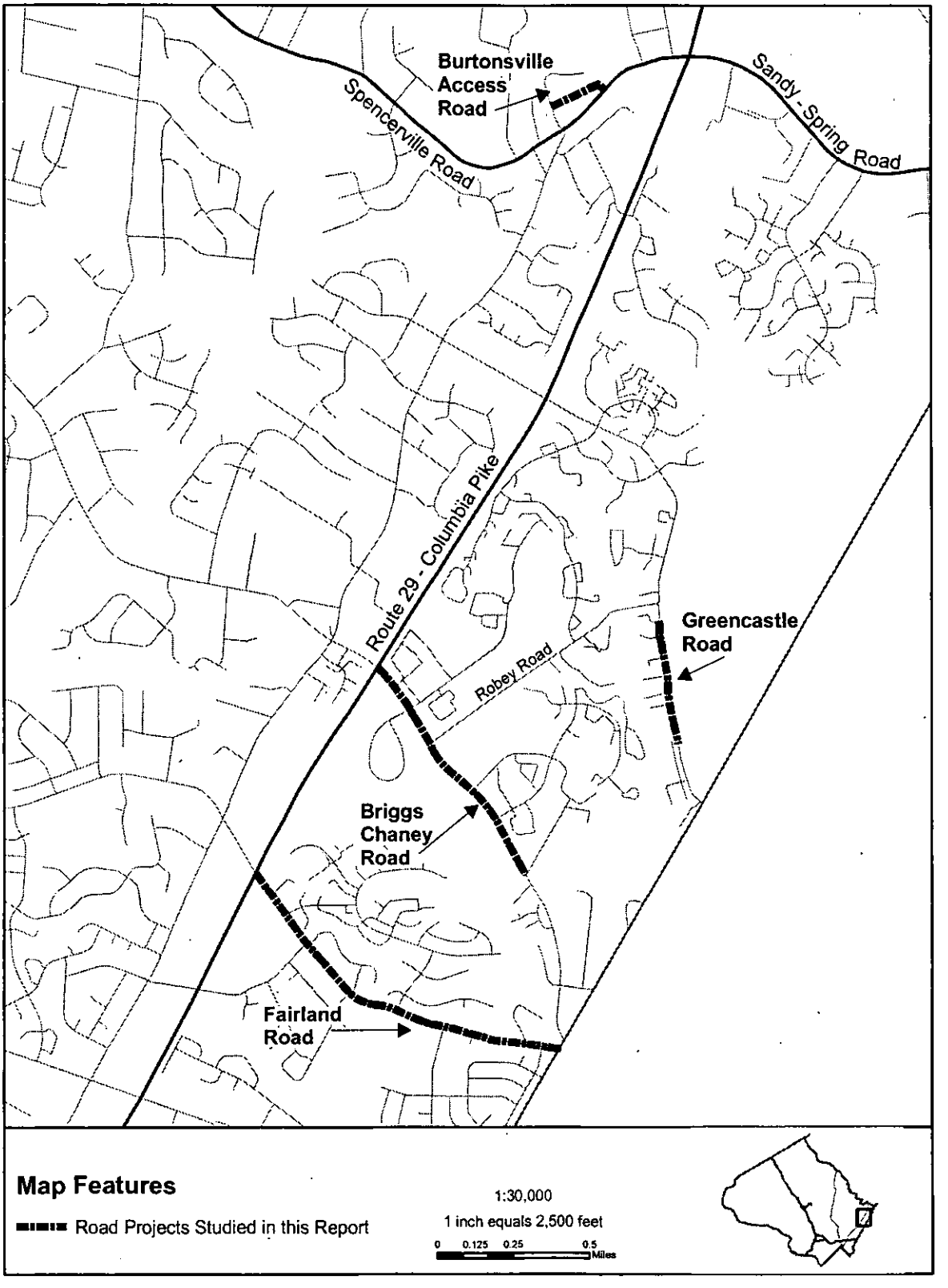


Exhibit 6: Recent County Road Projects - Route 29 Corridor



C. Data Sources

OLO used Project Description Forms (PDFs) from approved CIPs (and CIP amendments) as the primary sources for initial project cost and schedule estimates presented in this report. For completed projects, OLO used Department of Finance accounting statements to determine actual project costs. OLO identified actual project completion dates for these projects from final approved project PDFs and from DPWT monthly project status reports.

For current projects, OLO cites the project cost and schedule estimates from the most recently approved PDF and, where applicable, from the Executive's recommended FY09-14 CIP. In Chapter V, OLO presents information for current projects (that are planned to continue into FY09 and beyond) in two forms. Information and data labeled "through FY08" indicate the cost and schedule of a project as it appears in the PDF most recently approved by the Council. Information and data labeled "CE Recommended FY09-14" indicate the cost and schedule of a project as it appears in the Executive's recommended FY09-14 CIP. While the Executive's CIP recommendations represent the most recent estimates, the proposed spending amounts and timetables are not final until approved or modified by the Council.

CHAPTER IV. SURVEY OF RECENTLY COMPLETED ROAD PROJECTS

This chapter presents information about five recently completed County road projects. The chapter describes each project's scope and history and provides information about estimated and actual project costs and schedules. This chapter includes three sections:

Section A, **Explanation of Project Summaries,** describes the type of information included in the project summaries for recently completed road projects.

Section B, **Explanation of Project Data Sheets,** describes the type of information included in the project data sheets for recently completed road projects.

Section C presents the **Project Summaries and Data Sheets** for five recently completed County road projects.

A. Explanation of Project Summaries

This chapter includes one-page summaries of each of the five completed road projects studied in this report. The project summaries contain the following information:

- **First Year as Stand-Alone CIP Project**: The first year that the project appeared as a stand-alone project in a Council-approved CIP. A project may appear as a new project in a biennial CIP or as a result of mid-cycle amendment. Some projects may first appear in the CIP in one year with the first anticipated expenditures programmed for a future year.

- **Final Project Description**: A brief overview of the final project scope as constructed including scope changes that occurred after creation of the project in the CIP.

- **Facility Planning History**: A review of planning work conducted before the project was created as a stand-alone PDF including work funded through the Facility Planning – Transportation CIP project.

- **CIP Project History/Major Change(s) in Scope**: A brief overview of events that affected the scope, cost, or schedule of a project.

- **Noteworthy**: Other items of note that affected project cost, schedule, or management.

B. Explanation of Project Data Sheets

This chapter also includes one-page data sheets for each of the five completed road projects studied in this report. The project data sheets contain the following information:

- **Original Cost Estimate, (FY $):** Column (a) of Table A shows the total estimated full project cost for each PDF line item as it appeared in the first approved project PDF. The County's CIP displays the cost of multi-year projects in constant dollars, that is, in dollars current to that fiscal year without any inflation adjustment for future year expenditures.

- **Original Cost Estimate, (Inflated $):** Column (b) of Table A applies an inflation factor to the original cost estimates. The inflated cost estimates adjust estimated expenditures after the first year based on historic inflation rates. See Appendix B for a description of the inflation indices and methodology used in these calculations.

- **Actual Project Cost to Date:** Column (c) of Table A shows the actual expenditures and encumbrances charged to the project through January 2008. While all construction work is complete for these projects, some minor additional costs still may be charged to the project in the future.

  The un-shaded area in the figure below shows the location and appearance of the Original Cost Estimates and the Actual Project Cost to Date information as displayed in this chapter.

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	(a)	(b)	(c)	(d)	(e)
	Original Cost Estimate		Actual Project Cost to Date	Percent Variation Actual Cost Compared to:	
	FYxx $	Inflated $		FYxx $	Inflated $
Planning, Design & Supervision	$xxx	$xxx	$xxx	x.x%	x.x%
Land	$xxx	$xxx	$xxx	x.x%	x.x%
Site Improvements/Utilities	$xxx	$xxx	$xxx	x.x%	x.x%
Construction/Other	$xxx	$xxx	$xxx	x.x%	x.x%
Total	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**
Non-County Revenue	$xx	$xx	$xx		
Total Cost to County	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**

- **Percent Variation – Actual Cost Compared to Original Cost Estimate (FY $):** Column (d) of Table A shows the percent variation between the actual project cost to date and the original cost estimate as measured in constant dollars. The "FYxx" column header indicates the fiscal year for the constant dollar calculation. A positive percentage indicates that actual costs exceeded the original constant dollar estimate. A negative percentage indicates that the actual costs fell below the original constant dollar estimate.

- **Percent Variation – Actual Cost Compared to Original Estimate (Inflated $):** Column (e) of Table A shows the percent variation between the actual project cost to date and the original cost estimate adjusted for inflation. A positive percentage indicates that actual costs exceeded the inflation-adjusted original cost dollar estimate. A negative percentage indicates that the actual costs fell below the inflation-adjusted original cost dollar estimate.

  The un-shaded area in the figure below shows the location and appearance of the Percent Variation information as displayed in this chapter.

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	(a)	(b)	(c)	(d)	(e)
	Original Cost Estimate		Actual Project Cost to Date	Percent Variation Actual Cost Compared to:	
	FYxx $	Inflated $		FYxx $	Inflated $
Planning, Design & Supervision	$xxx	$xxx	$xxx	x.x%	x.x%
Land	$xxx	$xxx	$xxx	x.x%	x.x%
Site Improvements/Utilities	$xxx	$xxx	$xxx	x.x%	x.x%
Construction/Other	$xxx	$xxx	$xxx	x.x%	x.x%
Total	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**
Non-County Revenue	$xx	$xx	$xx		
Total Cost to County	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**

- **Non-County Revenue:** The next to last row of Table A totals funding contributed from a non-County source and dedicated for use on a specific project. Non-County revenue includes Federal and State aid, reimbursements from utility companies, and contributions from a developer for a specific project. This category does not include impact fee revenues, development approval payments and other revenues contributed by the private sector but which are fungible for spending on other projects.

- **Total Cost to County:** The bottom row of the table calculates the cost totals and variation percentages excluding non-County revenues.

The un-shaded area in the figure below shows the location and appearance of the Non-County Revenue and Total Cost to County information as displayed in this chapter.

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	(a)	(b)	(c)	(d)	(e)
	Original Cost Estimate		Actual Project Cost to Date	Percent Variation Actual Cost Compared to:	
	FYxx $	Inflated $		FYxx $	Inflated $
Planning, Design & Supervision	$xxx	$xxx	$xxx	x.x%	x.x%
Land	$xxx	$xxx	$xxx	x.x%	x.x%
Site Improvements/Utilities	$xxx	$xxx	$xxx	x.x%	x.x%
Construction/Other	$xxx	$xxx	$xxx	x.x%	x.x%
Total	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**
Non-County Revenue	$xx	$xx	$xx		
Total Cost to County	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**

- **Comparison of Cumulative Project Appropriation and Actual Project Costs:** As illustrated below, Table B shows the cumulative appropriation for the project as indicated in the last Council-approved PDF. The table also compares the cumulative appropriation with the actual project cost to date. A positive dollar amount or percentage in the Difference rows indicates that actual cost exceeded the cumulative appropriation. A negative dollar amount or percentage indicates that the actual cost fell below the cumulative appropriation.

Table B: Comparison of Cumulative Project Appropriation and Actual Project Costs (Dollars in $1,000s)

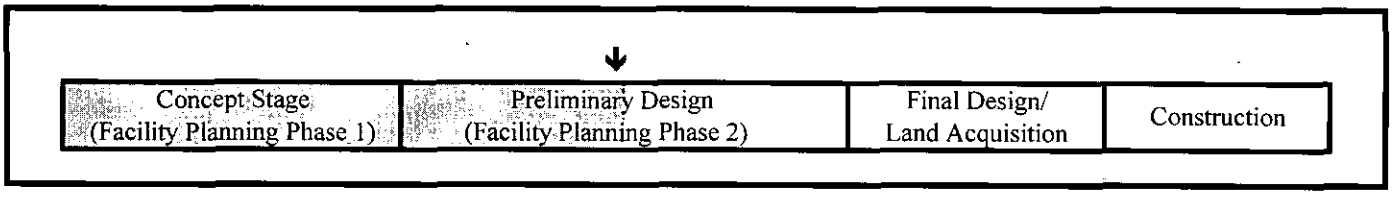
Actual Project Cost	$x,xxx
Cumulative Project Appropriation	$x,xxx
Difference (Dollars)	$xx
Difference (Percent)	$xx

- **Comparison of Original and Actual Project Duration:** As illustrated below, Table C shows the starting fiscal year for both the overall project and for construction, the fiscal year of project completion, and the total project duration (in years) as originally estimated in the first approved project PDF.[1] The table also shows the actual fiscal years of the start of the project, the start of construction, and the completion of the project as well as the actual duration of the completed project.[1]

Table C: Comparison of Original and Actual Project Duration

	Original Estimate	Actual
Start Project	FYxx	FYxx
Start Construction	FYxx	FYxx
Complete Project	FYxx	FYxx
Project Duration	x years	x years

- **Facility Planning History**: This section of the data sheet summarizes the planning work conducted before the project was created as a stand-alone PDF. This section also includes a bar that graphically illustrates the stage of a project when first created as a stand-alone PDF. (See Chapter II for descriptions of each project stage.) As illustrated in the figure below, an arrow and shading indicate the stage achieved at project creation. In this example, the project had partially completed the preliminary design phase.



- The final section of the data sheets summarizes **Significant Events/Occurrences that Affected Project Cost or Schedule** including major changes in project scope or modifications in funding source.

[1] These calculations assume work during the entire fiscal year and do not adjust for partial years of work during the first and last year of a project.

Part C. Project Summaries and Data Sheets

The project summaries and data sheets for the five completed road projects appear on the following pages:

COMPLETED PROJECT #1: BRIGGS CHANEY ROAD

First Year as Stand-Alone CIP Project: FY99

Final Project Description: This project reconstructed Briggs Chaney Road from Route 29 to Dogwood Drive. This project provided a four-lane divided roadway from Castle Boulevard to Aston Manor Drive (2,500 linear feet) and a two lane undivided roadway from Aston Manor Drive to Dogwood Drive (1,000 linear feet). The project also included construction of a sidewalk and bikeway, installation of street lighting, and right-of-way landscaping.

Facility Planning History: The Briggs Chaney Road project appeared in the Facility Planning PDF from FY94 through FY00. DPWT reports that it had completed preliminary design (Facility Planning Phase 2) for Briggs Chaney Road prior to creation of the project as a stand-alone PDF.

CIP Project History/Major Change(s) in Scope: Planning and design work for Briggs Chaney Road as a stand-alone CIP project began in FY00. Briggs Chaney Road was one of the first County road projects for which a private consultant (rather than DPWT staff) produced the traffic control plan. As a result of implementing a new process and turnover within consultant management, development of the traffic control plan took almost a year longer that originally anticipated by DPWT. The project experienced an additional four month delay when WSSC redesigned its water line relocation plans.

The project was delayed ten months because of a bid protest that resulted in a need to re-issue the construction contract solicitation. As Briggs Chaney Road existed prior to this reconstruction project, multiple utilities had to be relocated before and during the construction period. The construction contractor began work in FY02 and completed work in FY07.

There were no major changes in the scope of this project.

Noteworthy:

- Briggs Chaney Road remained open to traffic throughout the construction period.

Completed Project #1: Briggs Chaney Road

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	Original Cost Estimate		Actual Project Cost to Date*	Percent Variation Actual Cost Compared to:	
	FY99 $	Inflated $		FY99 $	Inflated $
Planning, Design & Supervision	$916	$985	$1,435	56.7%	45.7%
Land	$165	$220	$410	148.5%	86.7%
Site Improvements/Utilities	$1,924	$1,990	$713	-62.9%	-64.2%
Construction/Other	$3,603	$3,629	$3,889	7.9%	7.2%
Total	**$6,608**	**$6,823**	**$6,447**	**-2.4%**	**-5.5%**
Non-County Revenue	$555	$590	$365		
Total Cost to County	**$6,053**	**$6,234**	**$6,082**	**0.5%**	**-2.4%**

Table B: Comparison of Cumulative Project Appropriation and Actual Project Costs (Dollars in $1,000s)

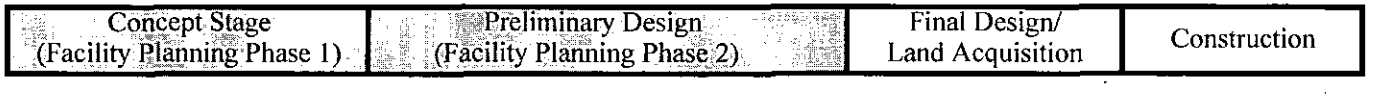
Actual Project Cost*	$6,447
Cumulative Project Appropriation	$6,800
Difference (Dollars)	-$353
Difference (Percent)	-5.2%

Table C: Comparison of Original and Actual Project Duration

	Original Estimate	Actual
Start Project	FY00	FY00
Start Construction	FY02	FY02
Complete Project	FY05	FY07
Project Duration	6 years	8 years

Facility Planning History

- Project in Facility Planning for 7 years (FY94 through FY00)
- Project created as stand alone CIP project after completion of preliminary design



Significant Events/Occurrences that Affected Project Cost or Schedule

- No major changes in project scope
- Bid protest resulted in need to re-issue construction contract solicitation

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

* Actual expenditures and encumbrances charged to the project through January 2008. Some minor additional costs still may be charged to the project.

COMPLETED PROJECT #2: GERMANTOWN ROAD EXTENDED

First Year as Stand-Alone CIP Project: FY99

Final Project Description: This project provided for the extension of Germantown Road from Scenery Drive to Watkins Mill Road (3,000 linear feet) as well as intersection improvements at Blunt Road. The project also included construction of a sidewalk and bikeway, installation of street lighting, and right-of-way landscaping.

Facility Planning History: The Germantown Road Extended project appeared in the Facility Planning PDF in FY96 and FY97. While DPWT frequently hires consultants to assist in Facility Planning, DPWT staff performed the Facility Planning concept development and design work for the Germantown Road project. DPWT reports it had partially completed preliminary design (Facility Planning Phase 2) when Germantown Road Extended was created as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: Planning and design work for Germantown Road Extended as a stand-alone CIP project began in FY99. The Council approved an FY01 change in project scope to provide for design and construction of a roundabout at the intersection with Blunt Road. The FY01 PDF also changed the project scope to construct two detour routes and to install additional street lights on Germantown and Blunt Roads. These changes in scope added about 12 months to the project schedule and increased costs by approximately $1,000,000.

The project required significantly more work to relocate utilities than had been anticipated during Facility Planning. The project also required redesign of stormwater management systems to comply with new regulatory requirements. DPWT estimates that utility relocation and stormwater management redesign delayed project construction by approximately 12 months.

Project construction began in FY02 and finished in FY05.

Noteworthy:

- In FY03, $50,000 was transferred from this project to the Advance Reforestation project.

Completed Project #2: Germantown Road Extended

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	Original Cost Estimate		Actual Project Cost to Date*	Percent Variation Actual Cost Compared to:	
	FY99 $	Inflated $		FY99 $	Inflated $
Planning, Design & Supervision	$863	$891	$1,614	87.0%	81.1%
Land	$150	$165	$177	18.0%	7.3%
Site Improvements/Utilities	$1,100	$1,104	$228	-79.3%	-79.4%
Construction/Other	$2,515	$2,516	$4,130	64.2%	64.2%
Total	**$4,628**	**$4,676**	**$6,148**	**32.9%**	**31.5%**
Non-County Revenue	$75	$77	$110		
Total Cost to County	**$4,553**	**$4,599**	**$6,038**	**32.6%**	**31.3%**

Table B: Comparison of Cumulative Project Appropriation and Actual Project Costs (Dollars in $1,000s)

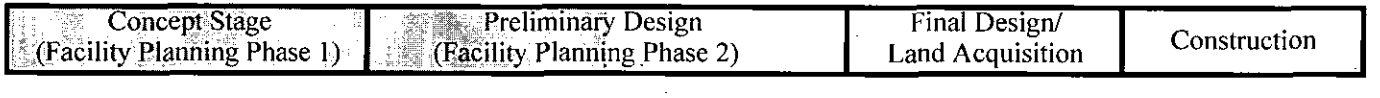
Actual Project Cost*	$6,148
Cumulative Project Appropriation	$6,302
Difference (Dollars)	-$154
Difference (Percent)	-2.4%

Table C: Comparison of Original and Actual Project Duration

	Original Estimate	Actual
Start Project	FY99	FY99
Start Construction	FY01	FY02
Complete Project	FY02	FY05
Project Duration	4 Years	7 Years

Facility Planning History

- Project in Facility Planning for 2 years (FY96 through FY97)
- Project created as stand alone CIP project with preliminary design partially complete



Significant Events/Occurrences that Affected Project Cost or Schedule

- Scope change -- design/construction of roundabout at intersection with Blunt Road
- Scope change -- construction of two detour roads and installation of additional street lights
- Redesign of stormwater management facilities

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

* Actual expenditures and encumbrances charged to the project through January 2008. Some minor additional costs still may be charged to the project.

COMPLETED PROJECT #3: MUNCASTER ROAD IMPROVEMENTS

First Year as Stand-Alone CIP Project: FY99

Final Project Description: This project realigned and widened Muncaster Road from Hollingsworth Drive to the entrance of the Agricultural History Farm Park (3,300 linear feet). The project also replaced the superstructure of the Muncaster Road bridge over Rock Creek.

Facility Planning History: From FY93 through FY97, the Facility Planning PDF included a project called "Muncaster Road – MD 115 to MD 108." During this period, DPWT conducted concept and design work to improve the entire four-mile length of Muncaster Road from Muncaster Mill Road to Olney-Laytonsville Road. The County Executive deemed these projects too costly and proposed a significantly smaller 0.6 mile project in the vicinity of Rock Creek.

DPWT reports that this project had completed conceptual design (Facility Planning Phase 1) but had not started preliminary design (Facility Planning Phase 2) when created as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: Planning and design work for the Muncaster Road Improvements as a stand-alone CIP project began in FY99. DPWT reports that during its early years, this project was not a priority of the County Executive and so received limited funding and staff resources.

The original project scope included repair of the bridge over Rock Creek. In FY02, DPWT determined that the bridge had deteriorated to a condition wherein planned repairs would not address all safety problems. In FY03, the Council approved a change in project scope to provide for replacement and upgrade of the bridge. The inclusion of bridge replacement in the project scope resulted in a need for new design work and subjected the project to new Federal, State, and County permitting requirements. The change in scope added about 12 months to the project schedule and increased costs by approximately $800,000.

The decision to replace the bridge also necessitated the re-routing of traffic during construction. DPWT developed options to detour traffic to other roads or to build a temporary bridge connecting Muncaster Road on either side of Rock Creek. While the temporary bridge option would have allowed continued traffic flow on Muncaster Road throughout project construction, it was also significantly more costly. The Council decided in favor of the detour option. DPWT reports that it diverted significant staff resources to responding to public inquiries and comments regarding the closing of the Muncaster Road bridge. To create the detour route, DPWT upgraded several nearby intersections. DPWT delayed the bridge closing several months to allow for completion of State roadway improvements along the detour route.

Project construction began in early FY06 and finished in late FY07. Muncaster Road was closed to traffic for eleven months during the bridge replacement phase of construction.

Noteworthy:

- Federal aid reimbursed the County for 80 percent of bridge replacement costs.
- The project was managed by five DPWT managers over the duration of the project.

Completed Project #3: Muncaster Road Improvements

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	Original Cost Estimate		Actual Project Cost to Date*	Percent Variation Actual Cost Compared to:	
	FY99 $	Inflated $		FY99 $	Inflated $
Planning, Design & Supervision	$376	$395	$900	139.3%	127.7%
Land	$82	$99	$291	255.4%	193.8%
Site Improvements/Utilities	$92	$93	$6	-93.8%	-93.8%
Construction/Other	$960	$964	$1,929	101.0%	100.2%
Total	**$1,510**	**$1,551**	**$3,126**	**107.0%**	**101.5%**
Non-County Revenue	$10	$11	$749		
Total Cost to County	**$1,500**	**$1,540**	**$2,377**	**58.5%**	**54.4%**

Table B: Comparison of Cumulative Project Appropriation and Actual Project Costs (Dollars in $1,000s)

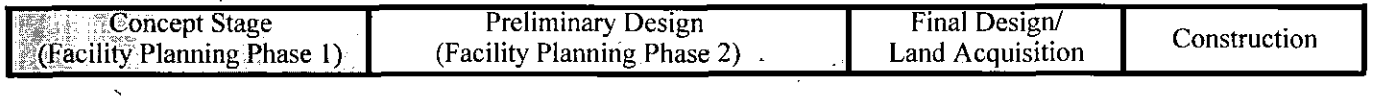
Actual Project Cost*	$3,126
Cumulative Project Appropriation	$3,699
Difference (Dollars)	-$573
Difference (Percent)	-15.5%

Table C: Comparison of Original and Actual Project Duration

	Original Estimate	Actual
Start Project	FY99	FY99
Start Construction	FY02	FY06
Complete Project	FY03	FY07
Project Duration	5 Years	9 Years

Facility Planning History

- Project a sub-part of significantly larger project that was in Facility Planning from FY95 - 99
- Project created as stand alone CIP project after completion of conceptual planning



Significant Events/Occurrences that Affected Project Cost or Schedule

- Change in scope from bridge repair to bridge replacement
- Need to establish new detour routes during bridge reconstruction
- Eligibility for Federal bridge replacement funds

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

* Actual expenditures and encumbrances charged to the project through January 2008. Some minor additional costs still may be charged to the project.

COMPLETED PROJECT #4: SHADY GROVE ROAD

First Year as Stand-Alone CIP Project: FY99

Final Project Description: This project widened segments of Shady Grove Road to provide six continuous lanes from I-370 to Muncaster Mill Road. The project also included construction of a sidewalk and bike lines.

Facility Planning History: Shady Grove Road was originally designed and built as a four-lane roadway with sufficiently wide medians to accommodate the addition of two additional lanes. The Shady Grove Road widening project appeared in the Facility Planning PDF from FY95 through FY99. DPWT reports that this project had completed conceptual design (Facility Planning Phase 1) but had not started preliminary design (Facility Planning Phase 2) when created as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: Planning and design work for Shady Grove Road as a stand-alone CIP project began in FY99. The Executive modified the project to include the addition of a sidewalk and pavement markings for a bike lane. These changes raised project cost by approximately $150,000 but did not affect the project schedule.

The construction contractor began work in FY02 and completed work on schedule in FY04.

Noteworthy:

- The County is constructing noise walls on Shady Grove Road between I-370 and Briardale Road at a cost of approximately $1.7 million (funded through the Highway Noise Abatement PDF).

Completed Project #4: Shady Grove Road

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	Original Cost Estimate		Actual Project Cost to Date*	Percent Variation Actual Cost Compared to:	
	FY99 $	Inflated $		FY99 $	Inflated $
Planning, Design & Supervision	$708	$767	$1,183	67.1%	54.3%
Land	$200	$266	$11	-94.4%	-95.8%
Site Improvements/Utilities	$150	$159	$693	362.1%	334.8%
Construction/Other	$3,192	$3,287	$2,747	-13.9%	-16.4%
Total	**$4,250**	**$4,479**	**$4,634**	**9.0%**	**3.5%**
Non-County Revenue	$0	$0	$0		
Total Cost to County	**$4,250**	**$4,479**	**$4,634**	**9.0%**	**3.5%**

Table B: Comparison of Cumulative Project Appropriation and Actual Project Costs (Dollars in $1,000s)

Actual Project Cost*	$4,634
Cumulative Project Appropriation	$4,822
Difference (Dollars)	-$188
Difference (Percent)	-3.9%

Table C: Comparison of Original and Actual Project Duration

	Original Estimate	Actual
Start Project	FY99	FY99
Start Construction	FY03	FY02
Complete Project	FY04	FY04
Project Duration	6 years	6 years

Facility Planning History

- Project in Facility Planning for 5 years (FY95 through FY99)
- Project created as stand alone CIP project after completion of conceptual design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Addition of a sidewalk and pavement markings for a bike lane at cost of about $150,000

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

* Actual expenditures and encumbrances charged to the project through January 2008. Some minor additional costs still may be charged to the project.

COMPLETED PROJECT #5: VALLEY PARK DRIVE

First Year as Stand-Alone CIP Project: FY99

Final Project Description: This project provides for the extension of Valley Park Drive to the Magruder Park Subdivision (1,130 linear feet). The project also includes a sidewalk on most of both sides of the road.

Facility Planning History: The Valley Park Drive project appeared in the Facility Planning PDF from FY93 through FY97. This project was closely tied to a proposed development by the Housing Opportunities Commission (HOC) on land it owned near Ridge Road. As originally planned, HOC was to fund the design and construction of the western portion of Valley Park Drive that would connect to Ridge Road. DPWT reports that it had partially completed the preliminary design (Facility Planning Phase 2) when the stand-alone PDF for this project was prepared.

CIP Project History/Major Change(s) in Scope: Planning and design work for Valley Park Drive as a stand-alone CIP project began in FY99. In FY01, the Council approved a change in the project scope that added sidewalks to the south side of Valley Park Drive.

Soon after creation of this CIP project, HOC decided not to develop the adjacent property and instead sold it to Elm Street Development. The project design was on hold from December 1999 to July 2002 while DPWT determined whether development would proceed on the property and whether the developer would assume responsibility for a portion of the project as originally planned.

The project moved forward when Elm Street elected to develop the land and to assume the cost of design and construction of the western portion of Valley Park Drive (790 feet of roadway east of Ridge Road) and acceleration and deceleration lanes at Ridge Road. In 2003, DPWT agreed to provide $50,000 to Elm Street for construction of a stormwater management pond. In 2004, DPWT and Elm Street signed a Memorandum of Understanding (MOU) that provided DPWT right of entry to Elm Street's property during construction of Valley Park Drive and conveyance of that property to DPWT at no cost. Elm Street also agreed to provide a contribution of $78,750 to the project.

Project construction was completed in August 2006.

Noteworthy:

- In FY05, $17,000 was transferred from this project to the Advance Reforestation project.

Completed Project #5: Valley Park Drive

Table A: Comparison of Original Cost Estimates and Actual Project Cost (Dollars in $1,000s)

	Original Cost Estimate		Actual Project Cost to Date*	Percent Variation Actual Cost Compared to:	
	FY99 $	Inflated $		FY99 $	Inflated $
Planning, Design & Supervision	$370	$389	$601	62.4%	54.7%
Land	$190	$230	$132	-30.7%	-42.7%
Site Improvements/Utilities	$235	$237	$32	-86.3%	-86.4%
Construction/Other	$950	$956	$2,298	141.8%	140.4%
Total	**$1,745**	**$1,811**	**$3,063**	**75.5%**	**69.1%**
Non-County Revenue	$78	$79	$138		
Total Cost to County	**$1,667**	**$1,733**	**$2,925**	**75.4%**	**68.8%**

Table B: Comparison of Cumulative Project Appropriation and Actual Project Costs (Dollars in $1,000s)

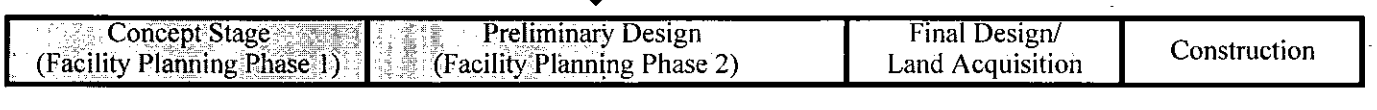
Actual Project Cost*	$3,063
Cumulative Project Appropriation	$3,065
Difference (Dollars)	-$2
Difference (Percent)	-0.1%

Table C: Comparison of Original and Actual Project Duration

	Original Estimate	Actual
Start Project	FY99	FY99
Start Construction	FY02	FY06
Complete Project	FY03	FY07
Project Duration	5 years	9 years

Facility Planning History

- Project in Facility Planning for 5 years (FY93 through FY97)
- Project created as stand alone CIP project with preliminary design partially complete



Significant Events/Occurrences that Affected Project Cost or Schedule

- Uncertainty surrounding private developer's role in the project led to 2 1/2 year delay
- An additional sidewalk was added to the project scope.

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

* Actual expenditures and encumbrances charged to the project through January 2008. Some minor additional costs still may be charged to the project.

CHAPTER V. SURVEY OF CURRENT COUNTY ROAD PROJECTS

This chapter presents information about nine current County road projects. The chapter describes each project's scope and history and provides information about estimated and actual project costs and schedules.

This chapter presents information for current projects (that are planned to continue into FY09 and beyond) in two forms. Information and data labeled "through FY08" indicate the cost and schedule of a project as it appears in the PDF most recently approved by the Council. Information and data labeled "CE Recommended FY09-14" indicate the cost and schedule of a project as it appears in the Executive's recommended FY09-14 CIP. While the Executive's CIP recommendations represent the most recent estimates, the proposed spending amounts and timetables are not final until approved or modified by the Council.

This chapter includes five sections:

Section A, **Explanation of Project Summaries (through FY08),** describes the type of information included in the project summaries for current road projects. These summaries reflect project status through the most recently approved PDF (either in the FY07-12 CIP or in an FY08 CIP amendment).

Section B, **Explanation of Project Data Sheets (through FY08),** describes the type of information included in the project data sheets for current road projects. These sheets include data from project creation through the most recently approved PDF (either in the FY07-12 CIP or in an FY08 CIP amendment).

Section C, **Explanation of Project Summaries (CE Recommended FY09-14),** explains the supplemental information that describes project changes appearing in the Executive's recommended FY09–14 CIP.

Section D, **Explanation of Project Data Sheets (CE Recommended FY09-14),** explains the supplemental data presented to reflect project expenditures recommended by the Executive for the FY09–14 CIP.

Section E presents the **Project Summaries and Data Sheets** for nine current County road projects.

A. Explanation of Project Summaries (through FY08)

This chapter includes summaries of each of the nine current road projects studied in this report. The summaries labeled "through FY08" reflect project status through the most recently approved PDF (either in the FY07-12 CIP or in an FY08 CIP amendment). The project summaries contain the following information:

- **First Year as Stand-Alone CIP Project**: The first year that the project appeared as a stand-alone project in a Council approved CIP.[1] A project may appear as a new project in a biennial CIP or as a result of mid-cycle amendment. Some projects may first appear in the CIP in one year with the first anticipated expenditures programmed for a future year.

- **Current Project Description**: A brief overview of the current project scope as indicated in the most recently approved PDF.

- **Facility Planning History**: A review of planning work conducted before the project was created as a stand-alone PDF including work funded through the Facility Planning – Transportation CIP project.

- **CIP Project History/Major Change(s) in Scope**: A brief overview of events from project creation through FY08 that affected the scope, cost, or schedule of a project.

- **Noteworthy**: Other items of note that affected project cost, schedule, or management.

[1] In the case of Nebel Street Extended, the first approved PDF only included funding for project planning and design. For the purpose of this report, OLO considers the "first" project PDF as the initial PDF to include an estimate of the full cost of the project.

B. Explanation of Project Data Sheets (through FY08)

This chapter also includes data sheets for each of the nine current road projects studied in this report. The sheets labeled "through FY08" include data from project creation through the most recently approved PDF (either in the FY07-12 CIP or in an FY08 CIP amendment). The project data sheets contain the following information:

- **Original Cost Estimate, (FY $):** Column (a) of Table A shows the total estimated full cost for each PDF line item as it appeared in the first approved PDF. The County's CIP displays the cost of multi-year projects in constant dollars, that is, in dollars current to that fiscal year without any inflation adjustment for future year expenditures.

- **Original Cost Estimate, (Inflated $):** Column (b) of Table A applies an inflation factor to the original cost estimates. The inflated cost estimates adjusts estimated expenditures after the first year based on historic inflation rates. See Appendix B for a description of the inflation indices and methodology used in these calculations.

- **Most Recently Approved Cost Estimate:** Column (c) of Table A shows the cost estimate by CIP line item as it appears in the most recently approved PDF (from either FY07 or FY08).

  The un-shaded area in the figure below shows the location and appearance of the Original Cost Estimates and the Actual Project Cost to Date information as displayed in this chapter.

Table A: Comparison of Original and FYxx Approved Cost Estimate (Dollars in $1,000s)

	(a)	(b)	(c)	(d)	(e)
	Original Cost Estimate		FYxx Approved Cost Estimate	Percent Variation FYxx Estimate Compared to:	
	FYxx $	Inflated $		FYxx $	Inflated $
Planning, Design & Supervision	$xxx	$xxx	$xxx	x.x%	x.x%
Land	$xxx	$xxx	$xxx	x.x%	x.x%
Site Improvements/Utilities	$xxx	$xxx	$xxx	x.x%	x.x%
Construction/Other	$xxx	$xxx	$xxx	x.x%	x.x%
Total	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**
Non-County Revenue	$xx	$xx	$xx		
Total Cost to County	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**

- **Percent Variation – Most Recently Approved Estimate Compared to Original Estimate (FY $):** Column (d) of Table A shows the percent variation between the most recently approved project cost estimate and the original cost estimate as measured in constant dollars. The "FYxx" column header indicates the fiscal year for the constant dollar calculation. A positive percentage indicates that the most recently approved cost estimate exceeded the original constant dollar estimate. A negative percentage indicates that the most recently approved cost estimate fell below the original constant dollar estimate.

- **Percent Variation – Most Recently Approved Estimate Compared to Original Estimate (Inflated $):** Column (e) of Table A shows the percent variation between the most recently approved project cost estimate and the original cost estimate adjusted for inflation. A positive percentage indicates that the most recently approved cost estimate exceeded the inflation adjusted original cost dollar estimate. A negative percentage indicates that the most recently approved cost estimate fell below the inflation adjusted original cost dollar estimate.

  The un-shaded area in the figure below shows the location and appearance of the Percent Variation information as displayed in this chapter.

Table A: Comparison of Original and FYxx Approved Cost Estimate (Dollars in $1,000s)

	(a)	(b)	(c)	(d)	(e)
	Original Cost Estimate		FYxx Approved Cost Estimate	Percent Variation FYxx Estimate Compared to:	
	FYxx $	Inflated $		FYxx $	Inflated $
Planning, Design & Supervision	$xxx	$xxx	$xxx	x.x%	x.x%
Land	$xxx	$xxx	$xxx	x.x%	x.x%
Site Improvements/Utilities	$xxx	$xxx	$xxx	x.x%	x.x%
Construction/Other	$xxx	$xxx	$xxx	x.x%	x.x%
Total	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**
Non-County Revenue	$xx	$xx	$xx		
Total Cost to County	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**

- **Non-County Revenue:** The next to last row of Table A totals funding contributed from a non-County source and dedicated for use on a specific project. Non-County revenue includes Federal and State aid, reimbursements from utility companies, and contributions from a developer for a specific project. This category does not include impact fee revenues, development approval payments and other revenues contributed by the private sector but which are fungible for spending on other projects.

- **Total Cost to County:** The bottom row of the table calculates the cost totals and variation percentages excluding non-County revenues.

The un-shaded area in the figure below shows the location and appearance of the Non-County Revenue and Total Cost to County information as displayed in this chapter.

Table A: Comparison of Original and FYxx Approved Cost Estimate (Dollars in $1,000s)

	(a)	(b)	(c)	(d)	(e)
	Original Cost Estimate		FYxx Approved Cost Estimate	Percent Variation FYxx Estimate Compared to:	
	FYxx $	Inflated $		FYxx $	Inflated $
Planning, Design & Supervision	$xxx	$xxx	$xxx	x.x%	x.x%
Land	$xxx	$xxx	$xxx	x.x%	x.x%
Site Improvements/Utilities	$xxx	$xxx	$xxx	x.x%	x.x%
Construction/Other	$xxx	$xxx	$xxx	x.x%	x.x%
Total	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**
Non-County Revenue	$xx	$xx	$xx		
Total Cost to County	**$x,xxx**	**$x,xxx**	**$x,xxx**	**x.x%**	**x.x%**

- **Expenditures/Encumbrances to Date:** The total amount of actual project expenditures and encumbrances charged through January 2008 appears below Table A.

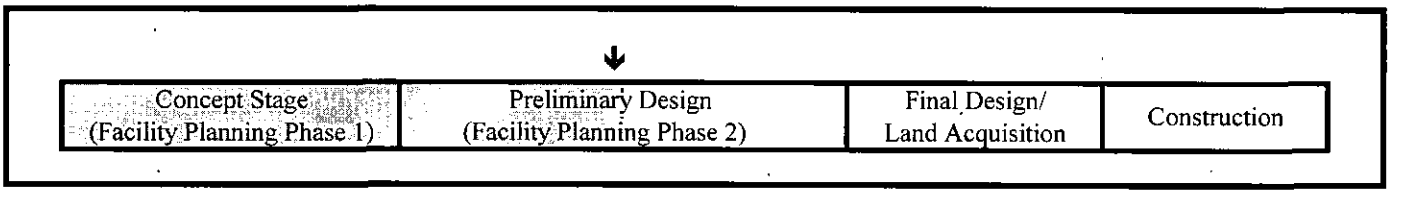
- **Comparison of Original and Most Recently Approved Estimated Schedule:** Table B shows the starting fiscal year for the project and for construction, the fiscal year of project completion, and the total project duration (in years) as estimated in the first approved PDF.[2] The table also shows the start of the project, the start of construction, and the completion of the project as well as the duration of the project as shown in the most recently approved PDF (from either FY07 or FY08).

Table B: Comparison of Original and FYxx Approved Estimated Schedule

	Original Estimate	FYxx Estimate
Start Project	FYxx	FYxx
Start Construction	FYxx	FYxx
Complete Project	FYxx	FYxx
Project Duration	x years	x years

[2] These calculations assume work during the entire fiscal year and do not adjust for partial years of work during the first and last year of a project.

- **Facility Planning History**: This section of the data sheet summarizes the planning work conducted before the project was created as a stand-alone PDF. This section also includes a bar that graphically illustrates the stage of a project when first created as a stand-alone PDF. (See Chapter II for descriptions of each project stage.) As illustrated in the figure below, an arrow and shading indicate the stage achieved at project creation. In this example, the project had partially completed the preliminary design phase.



- The final section of each data sheet summarizes **Significant Events/Occurrences that Affected Project Cost or Schedule** through FY08 including major changes in project scope or modifications in funding source.

C. Explanation of Project Summaries (CE Recommended FY09-14)

This chapter also includes supplemental information for projects with new PDFs in the Executive's recommended FY09–14 CIP. The summaries labeled "CE's Recommended FY09-14 CIP" describe changes proposed by the Executive from the most recently approved PDF, including the following information:

- **CE Recommended FY09 Changes in Project Description/Scope**: This section describes changes in the project scope (as compared to the most recently approved PDF) recommended by the Executive for FY09 or future years.

- **CE Recommended Cost Change**: This section describes changes in the project cost (as compared to the most recently approved PDF) recommended by the Executive for FY09 or future years.

- **CE Recommended Schedule Change**: This section describes changes in the project schedule (as compared to the most recently approved PDF) recommended by the Executive.

D. Explanation of Project Data Sheets (CE Recommended FY09-14)

This chapter also includes supplemental data sheets for projects with new PDFs in the Executive's recommended FY09–14 CIP. The data sheets labeled "CE's Recommended FY09-14 CIP" describe changes proposed by the Executive from the most recently approved PDF. The data presented in these sheets are identical to those in the "through FY08" sheets with two exceptions.

- In Table A, project expenditures recommend by the Executive in the FY09-14 CIP replace the cost estimate from the mostly recently approved PDF. This change produces new calculations in the percent variation columns.

- In Table B, the project schedule recommended by the Executive in the FY09-14 CIP replaces the schedule from the mostly recently approved PDF.

E. Project Summaries and Data Sheets

The project summaries and data sheets for the nine current road projects appear on the following pages:

CURRENT PROJECT #1: BURTONSVILLE ACCESS ROAD (Through FY08)

First Year as Stand-Alone CIP Project: FY05

Current Project Description: This project provides a new two-lane road between Spencerville Road (MD 198) and the Burtonsville Elementary School Access Road (1,400 linear feet) to create alternate access to businesses along the north side of Spencerville Road. The project also includes an eight-foot parking lane, curb and gutter, sidewalks, landscaping, and street lighting.

Facility Planning History: The Burtonsville Access Road project appeared in the Facility Planning PDF from FY00 through FY03. DPWT reports that this project had completed conceptual design (Facility Planning Phase 1) but had not started preliminary design (Facility Planning Phase 2) when created as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: Planning and design work for Burtonsville Access Road as a stand-alone CIP project began in FY05. During consideration of the FY07-12 CIP, the Council moved project completion from FY08 to FY10 to allow time for the Department of Housing and Community Affairs to complete Facility Planning work in Burtonsville.

Once DPWT completed preliminary design for this project, the Executive recommended a revised PDF for the FY07-12 CIP. As the previous cost estimates were performed before the preliminary design stage, DPWT had limited information on the amount and value of land that would have to be acquired for the project. As recommended by the Executive, the Council approved an FY07 PDF that increased the cost estimate to $6.3 million, an amount $2.5 million greater than in the previous PDF. The same PDF assumes that land acquisition will occur in FY08 and moves project completion to FY10.

At present, project design is complete but property acquisition has not occurred.

Noteworthy:

- This project will require Federal wetland permits.

Current Project #1: Burtonsville Access Road (through FY08)

Table A: Comparison of Original and FY08 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY08 Approved Cost Estimate	Percent Variation FY08 Estimate Compared to:	
	FY05 $	Inflated $		FY05 $	Inflated $
Planning, Design & Supervision	$839	$865	$1,137	35.5%	31.5%
Land	$648	$713	$2,315	257.3%	224.8%
Site Improvements/Utilities	$958	$1,028	$273	-71.5%	-73.4%
Construction/Other	$1,300	$1,360	$2,527	94.4%	85.8%
Total	**$3,745**	**$3,966**	**$6,252**	**66.9%**	**57.6%**
Non-County Revenue	$0	$0	$48		
Total Cost to County	**$3,745**	**$3,966**	**$6,204**	**65.7%**	**56.4%**

Expenditures/Encumbrances to Date (as of 1/08): $0.4 million

Table B: Comparison of Original and FY08 Approved Estimated Schedule

	Original Estimate	FY08 Estimate
Start Project	FY05	FY05
Start Construction	FY07	FY09
Complete Project	FY08	FY10
Project Duration	4 years	6 years

Facility Planning History

- Project in Facility Planning for 4 years (FY00 through FY03)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- The first cost estimate was created before the project underwent preliminary design.

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #1: BURTONSVILLE ACCESS ROAD (CE's Recommended FY09-14 CIP)

CE Recommended FY09 Changes in Project Description/Scope: None

CE Recommended Cost Change: The Executive's recommended FY09-15 CIP shows a $1.7 million increase for the Burtonsville Access Road project as compared to the PDF approved by the Council for FY08. The Executive attributes this cost increase to "the project reaching detailed design, increased land values, and increased construction and streetlighting costs."

CE Recommended Schedule Change: The Executive's recommended FY09-15 CIP anticipates that the Burtonsville Access Road project will be completed in FY11, one year later than indicated in the PDF approved by the Council for FY08.

Current Project #1: Burtonsville Access Road (includes CE's FY09 recommendations)

Table A: Comparison of Original and FY09 Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY09 CE Recommended	Percent Variation FY09 Estimate Compared to:	
	FY05 $	Inflated $		FY05 $	Inflated $
Planning, Design & Supervision	$839	$865	$1,044	24.4%	20.7%
Land	$648	$713	$3,200	393.8%	348.9%
Site Improvements/Utilities	$958	$1,028	$12	-98.7%	-98.8%
Construction/Other	$1,300	$1,360	$3,693	184.1%	171.5%
Total	**$3,745**	**$3,966**	**$7,949**	**112.3%**	**100.4%**
Non-County Revenue	$0	$0	$54		
Total Cost to County	**$3,745**	**$3,966**	**$7,895**	**110.8%**	**99.1%**

Expenditures/Encumbrances to Date (as of 1/08): $0.4 million

Table B: Comparison of Original and FY09 Estimated Schedule

	Original Estimate	FY09 Estimate
Start Project	FY05	FY05
Start Construction	FY07	FY11
Complete Project	FY08	FY11
Project Duration	4 years	7 years

Facility Planning History

- Project in Facility Planning for 4 years (FY00 through FY03)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

FY09 County Executive Recommended Changes to Project Cost and Schedule

- CE recommends adding $1.7 million for increased land acquisition, construction, and streetlighting costs
- CE anticipates project completion in FY11, one year later than in the FY08 approved PDF

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #2: CITADEL AVENUE EXTENDED (Through FY08)

First Year as Stand-Alone CIP Project: FY03

Current Project Description: This project provides an extension of Citadel Avenue from south of Marinelli Road to Nicholson Lane (650 linear feet) to align with Huff Court. The project also includes a sidewalk, street lighting, retaining walls, and tree planting.

Facility Planning History: In 1996, DPWT prepared a study, "Chapman Avenue Final Report," which recommended that Chapman Avenue be extended south from Bou Avenue to connect to a proposed extension of Executive Boulevard. The report included the Citadel Avenue project limits as a section of Chapman Avenue. Citadel Avenue appeared as an independent project in the Facility Planning PDF from FY98 through FY99 and again in FY02. Preliminary design (Facility Planning Phase 2) was complete when the Council created Citadel Avenue as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: The Executive recommended (and the Council approved) an initial project PDF in the FY03–08 CIP that appropriated no funds for FY03 and estimated the first project expenditures to occur in FY05.

The approved FY07 PDF shows a one year delay in project completion (from FY07 to FY08). Several factors affected the project schedule. DPWT engaged in extended negotiations to construct a retaining wall on property owned by the Washington Metropolitan Area Transit Authority (WMATA). In addition, negotiations with an adjacent property owner for dedication of land took several months longer than originally anticipated by DPWT. Finally, the Department continues to work with WSSC to resolve logistical issues related to the relocation of a 66-inch water main that traverses the project area.

The Citadel Avenue project is located in an area that has experienced rapidly increasing land prices. A land appraisal performed in 2006 estimated that per square foot land values had doubled over an appraisal performed 18 months earlier. As a result, DPWT increased the estimated land acquisition cost by almost $1.5 million.

Project construction began in October 2007. As the Citadel Avenue project is scheduled for completion in FY08, the Executive's FY09-14 recommended CIP does not include an updated PDF for this project.

Noteworthy:

- WSSC will assume a 50 percent share of the cost of relocating the 66-inch water main.

Current Project #2: Citadel Avenue Extended (through FY08)

Table A: Comparison of Original and FY07 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY07 Approved Cost Estimate	Percent Variation FY07 Estimate Compared to:	
	FY03 $	Inflated $		FY03 $	Inflated $
Planning, Design & Supervision	$397	$433	$555	39.8%	28.1%
Land	$1,000	$1,330	$2,456	145.6%	84.7%
Site Improvements/Utilities	$441	$505	$183	-58.5%	-63.7%
Construction/Other	$1,212	$1,423	$2,213	82.6%	55.5%
Total	**$3,050**	**$3,691**	**$5,407**	**77.3%**	**46.5%**
Non-County Revenue	$0	$0	$172		
Total Cost to County	**$3,050**	**$3,691**	**$5,235**	**71.6%**	**41.8%**

Expenditures/Encumbrances to Date (as of 1/08): $3.5 million

Table B: Comparison of Original and FY07 Approved Estimated Schedule

	Original Estimate	FY07 Estimate
Start Project	FY05	FY03
Start Construction	FY06	FY08
Complete Project	FY07	FY08
Project Duration	3 years	6 years

Facility Planning History

- Project in Facility Planning for 3 years (FY98, FY99, and FY02)
- Project created as stand alone CIP project with partial completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Extensive coordination with WMATA for construction of a retaining wall on WMATA property
- Relocation of a 66-inch water main in right of way

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #3: FAIRLAND ROAD IMPROVEMENT

First Year as Stand-Alone CIP Project: FY03

Current Project Description: This project widens and provides other improvements to Fairland Road from Route 29 to the Prince George's County line (7,130 linear feet). The project also involves installation of a storm water drainage system, construction of a sidewalk and bikeway, installation of street lighting, and right-of-way landscaping.

Facility Planning History: The Fairland Road Improvement project appeared in the Facility Planning PDF from FY99 through FY03. DPWT reports that it had completed preliminary design (Facility Planning Phase 2) for Fairland Road prior to creation of the project as a stand-alone PDF.

CIP Project History/Major Change(s) in Scope: The Council approved creation of the Fairland Road Improvements project as an off-year amendment to the CIP. The Executive recommended this CIP amendment to improve east-west mobility and to correct hazardous roadway features that caused unusually high accident rates on Fairland Road east of Route 29.

Planning and design work for Fairland Road Improvements as a stand-alone CIP project began in FY03. In FY04, DPWT modified its project schedule to sequence utility relocation before roadway construction. The original plan to relocate water, telephone, electricity, and cable television lines concurrent with roadway construction proved infeasible given the narrowness of the Fairland Road right-of-way. WSSC will contribute up to $129,000 to cover the cost of the water line relocation.

DPWT revised project plans in anticipation of a future State project for an interchange at Route 29 and Fairland Road. DPWT raised the elevation of Fairland Road and re-designed the intersection with Brahms Avenue to accommodate the future interchange. The State will reimburse the County up to $1.5 million for costs related to the interchange.

DPWT adjusted project schedules and reallocated resources so that project changes related to neither utility relocation nor the Route 29 interchange delayed planned project completion. As indicated in the approved FY08 PDF, DPWT anticipates completing the Fairland Road project in FY08.

As the Fairland Road project is scheduled for completion in FY08, the Executive's FY09-14 recommended CIP does not include an updated PDF for this project.

Noteworthy:

- The County entered into a memorandum of understanding with SHA pertaining to the construction of a roundabout at Fairland Road and Brahms Avenue in anticipation of a future Route 29 – Fairland Road interchange.
- In FY07, $18,000 was transferred from this project to the Advance Reforestation project.

Current Project #3: Fairland Road Improvement (through FY08)

Table A: Comparison of Original and FY07 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY07 Approved Cost Estimate	Percent Variation FY07 Estimate Compared to:	
	FY03 $	Inflated $		FY03 $	Inflated $
Planning, Design & Supervision	$1,447	$1,560	$1,292	-10.7%	-17.2%
Land	$1,465	$1,747	$1,741	18.8%	-0.3%
Site Improvements/Utilities	$3,046	$3,638	$1,643	-46.1%	-54.8%
Construction/Other	$4,578	$5,415	$6,269	36.9%	15.8%
Total	**$10,536**	**$12,360**	**$10,945**	**3.9%**	**-11.4%**
Non-County Revenue	$0	$0	$1,629		
Total Cost to County	**$10,536**	**$12,360**	**$9,316**	**-11.6%**	**-24.6%**

Expenditures/Encumbrances to Date (as of 1/08): $9.2 million

Table B: Comparison of Original and FY07 Approved Estimated Schedule

	Original Estimate	FY07 Estimate
Start Project	FY03	FY03
Start Construction	FY06	FY06
Complete Project	FY08	FY08
Project Duration	6 years	6 years

Facility Planning History

- Project in Facility Planning for 5 years (FY99 through FY03)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Re-sequenced project plans to complete utility relocation prior to roadway construction
- WSSC to contribute $129,000 for water line relocation

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #4: GREENCASTLE ROAD (Through FY08)

First Year as Stand-Alone CIP Project: FY01

Current Project Description: This project provides for the reconstruction of Greencastle Road from south of Robey Road to Greencastle Ridge Terrace (2,100 linear feet). The project also includes the construction of a bikeway.

Facility Planning History: Planning for the Greencastle Road project originated in the Intersection and Spot Improvements PDF as improvements to the entrance to Fairland Recreational Park opposite Wildlife Lane. DPWT reports that it had completed the conceptual project planning equivalent to Facility Planning Phase I by the time this project was created as a stand-alone PDF.

CIP Project History/Major Change(s) in Scope: In response to a request from M-NCPPC, the Executive recommended (and the Council approved) creation of Greencastle Road as a stand-alone project in the FY01-06 CIP with initial expenditures not programmed until FY03. The scope of the approved PDF included reconstruction of Greencastle Road from south of Robey Road to Greencastle Ridge Terrace to correct unsafe conditions.

In the FY05-10 CIP, the Council approved a change to the project scope to double the length of the bikeway along Greencastle Road.

The PDF approved in the FY07–12 CIP included the addition of an underground stormwater management structure to the Greencastle Road project. DPWT had received Maryland Department of the Environment (MDE) approval of the stormwater management concept plan in 2002. When new MDE stormwater management regulations took effect, DPWT was required to add the underground structure to the project scope.

DPWT has had to coordinate the design of the roadway with various ongoing and proposed developments along Greencastle Road. As a result, DPWT had to revise the project's traffic control plan to take into account changes in roadway access and increasing levels of demand.

The longer bikeway, the complex stormwater management system, and revised traffic control plan contributed to a project cost increase of almost $1.0 million and delayed project completion by two years (from FY06 to FY08).

Project construction began in July 2007. DPWT is currently engaged in negotiations to acquire the final portions of right-of-way needed to complete construction. As the Greencastle Road project is scheduled for completion in FY08, the Executive's FY09-14 recommended CIP does not include an updated PDF for this project.

Noteworthy:

- The scope and limits of the project were coordinated with the Robey Road project at the northern limit of the project.

Current Project #4: Greencastle Road (through FY08)

Table A: Comparison of Original and FY07 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY07 Approved Cost Estimate	Percent Variation FY07 Estimate Compared to:	
	FY01 $	Inflated $		FY03 $	Inflated $
Planning, Design & Supervision	$575	$634	$697	21.2%	9.9%
Land	$169	$247	$156	-7.7%	-37.0%
Site Improvements/Utilities	$590	$695	$540	-8.5%	-22.3%
Construction/Other	$1,216	$1,425	$2,114	73.8%	48.3%
Total	**$2,550**	**$3,002**	**$3,507**	**37.5%**	**16.8%**
Non-County Revenue	$25	$30	$69		
Total Cost to County	**$2,525**	**$2,972**	**$3,438**	**36.2%**	**15.7%**

Expenditures/Encumbrances to Date (as of 1/08): $3.5 million

Table B: Comparison of Original and FY07 Approved Estimated Schedule

	Original Estimate	FY07 Estimate
Start Project	FY03	FY03
Start Construction	FY05	FY05
Complete Project	FY06	FY08
Project Duration	4 years	6 years

Facility Planning History

- The concept and preliminary design phases were funded under Intersection and Spot Improvements CIP
- Project created as stand alone CIP project at completion of the concept stage

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Scope change --- addition of a underground stormwater management structure

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #5: MONTROSE PARKWAY WEST (Through FY08)

First Year as Stand-Alone CIP Project: FY03

Current Project Description: This project provides for the construction of a new four-lane divided parkway, sidewalks, and a bikeway from Montrose Road (east of Tildenwood Drive) to 'old' Old Georgetown Road (5,300 linear feet). A segment of Montrose Road will be widened to six lanes with a median and sidewalks. The project also includes construction of noise barriers, the extension of Hitching Post Lane, creation of a new four-way signalized intersection at Montrose Road and Hitching Post Lane, and construction of a bridge on Montrose Road over Old Farm Creek.

Facility Planning History: The Montrose Parkway project appeared in the Facility Planning PDF from FY95 through FY02. During Facility Planning, the project scope expanded to include widening and making improvements to Montrose Road. DPWT reports that the Montrose Parkway West project had completed preliminary design (Facility Planning Phase 2) when created as a stand-alone project.

CIP Project History/Major Change(s) in Scope: Planning and design work for Montrose Parkway as a stand-alone CIP project began in FY03. The Executive recommended (and the Council approved) several revisions in project scope for the FY05-10 CIP, including: the addition of a private access road to an office building; the lengthening of the Montrose Road bridge span to allow wildlife passage; the addition of a bikeway bridge over an unnamed tributary; construction of a noise berm behind homes on Tildenwood Lane; and reforestation of 27 acres of land. In total, these scope changes increased the estimated project cost by about $1.6 million.

From FY03 to FY07 the estimated cost of land for the project increased by $3.2 million. The increase in land costs is attributable to escalating land values, the purchase of a wetland mitigation site (0.5 acres), and the inclusion of the costs to demolish seven houses in advance of the start of construction.

The start of construction was delayed six months to September 2005 due to a longer permit acquisition period, including Federal and State wetlands, than anticipated in Facility Planning.

According to the amended FY07-12 CIP, construction on Montrose Parkway is scheduled to end in FY10. Based on the current pace of the project, DPWT expects to substantially complete work on Montrose Parkway during FY09.

Noteworthy:

- The project is being coordinated with the State Highway Administration (SHA) Interchange project at Randolph Road, MD355, and Montrose Road.
- In FY07, $40,000 was transferred from this project to the Advance Reforestation project.

Current Project #5: Montrose Parkway West (through FY08)

Table A: Comparison of Original and FY08 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY08 Approved Cost Estimate	Percent Variation FY08 Estimate Compared to:	
	FY03 $	Inflated $		FY03 $	Inflated $
Planning, Design & Supervision	$4,711	$5,225	$5,414	14.9%	3.6%
Land	$28,094	$33,600	$31,281	11.3%	-6.9%
Site Improvements/Utilities	$4,366	$5,238	$839	-80.8%	-84.0%
Construction/Other	$24,685	$29,492	$30,601	24.0%	3.8%
Total	**$61,856**	**$73,556**	**$68,135**	**10.2%**	**-7.4%**
Non-County Revenue	$0	$0	$549		
Total Cost to County	**$61,856**	**$73,556**	**$67,586**	**9.3%**	**-8.1%**

Expenditures/Encumbrances to Date (as of 1/08): $67.7 million

Table B: Comparison of Original and FY08 Approved Estimated Schedule

	Original Estimate	FY08 Estimate
Start Project	FY03	FY03
Start Construction	FY05	FY06
Complete Project	FY09	FY10
Project Duration	7 years	8 years

Facility Planning History

- Project in Facility Planning for 8 years (FY95 through FY02)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Scope changes -- addition of private access road; lengthening of the Montrose Road bridge span;
- Escalating land values, purchase of a wetland mitigation site, and demolition costs for seven houses

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #5: MONTROSE PARKWAY WEST (CE's Recommended FY09-14 CIP)

CE Recommended FY09 Changes in Project Description/Scope: None

CE Recommended Cost Change: The Executive's recommended FY09-15 CIP shows a $2.2 million increase for the Montrose Parkway West project as compared to the PDF approved by the Council for FY08. The Executive attributes this cost increase to "actual bid prices, allowance for additional construction costs associated with previously unknown underground utility conflicts along East Jefferson Street, and the addition of PEPCO charges to connect and energize streetlights, which was not previously included."

The recommended PDF further notes that the cost estimate does not include all land acquisition expenditures. The total cost of the project will increase once land acquisition costs are known. The County Government plans to initially fund land acquisition for this project through the Advanced Land Acquisition Revolving Fund (ALARF). A future appropriation would be needed to reimburse ALARF.

CE Recommended Schedule Change: The Executive's recommended FY09-15 CIP anticipates that the Montrose Parkway West project will be completed in FY09, one year earlier later than indicated in the PDF approved by the Council for FY08.

Current Project #5: Montrose Parkway West (includes CE's FY09 recommendations)

Table A: Comparison of Original and FY09 Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY09 CE Recommended	Percent Variation FY09 Estimate Compared to:	
	FY03 $	Inflated $		FY03 $	Inflated $
Planning, Design & Supervision	$4,711	$5,225	$5,483	16.4%	4.9%
Land	$28,094	$33,600	$31,281	11.3%	-6.9%
Site Improvements/Utilities	$4,366	$5,238	$1,136	-74.0%	-78.3%
Construction/Other	$24,685	$29,492	$32,478	31.6%	10.1%
Total	**$61,856**	**$73,556**	**$70,378**	**13.8%**	**-4.3%**
Non-County Revenue	$0	$0	$549		
Total Cost to County	**$61,856**	**$73,556**	**$69,829**	**12.9%**	**-5.1%**

Expenditures/Encumbrances to Date (as of 1/08): $67.7 million

Table B: Comparison of Original and FY09 Estimated Schedule

	Original Estimate	FY09 Estimate
Start Project	FY03	FY03
Start Construction	FY05	FY06
Complete Project	FY09	FY09
Project Duration	7 years	7 years

Facility Planning History

- Project in Facility Planning for 8 years (FY95 through FY02)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

FY09 County Executive Recommended Changes to Project Cost and Schedule

- CE recommends adding $2.2 million for increased construction, utlility relocation, and streetlighting costs
- CE notes that the cost estimate does not include all land acquisition expenditures.
- CE anticipates project completion in FY09, one year earlier than in the FY08 approved PDF

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #6: NEBEL STREET EXTENDED (Through FY08)

First Year as Stand-Alone CIP Project: FY05[3]

Current Project Description: This project provides for the extension of Nebel Street from Randolph Road to the Target store (1,300 linear feet). The project also includes a sidewalk, bike path, street lighting, and tree planting.

Facility Planning History: The Nebel Street Extended project appeared in the Facility Planning PDF from FY99 through FY03. DPWT reports that it had completed preliminary design (Facility Planning Phase 2) prior to creation of Nebel Street Extended as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: The Executive recommended (and the Council approved) creation of the Nebel Street Extended PDF as an off-year CIP amendment in FY03. The first project PDF included funding only for design. The Executive did not estimate land, site improvements, or construction cost estimates because of uncertainty at that time about the extent of property owner land dedication and roadway construction.

The Nebel Street PDF approved in the FY05-10 CIP estimated total project cost at $11.3 million with a project completion in FY07. For more than three years, DPWT has been involved in complex and lengthy negotiations with property owners regarding a series of land acquisition issues including right-of-entry, access to financial information needed to conduct appraisals, and the width of the right-of-way that will be dedicated for the project. As buildings exist in the proposed Nebel Street right-of-way, the County is unable to acquire property through the advance taking process. Land acquisition negotiations currently are ongoing.

In an FY08 amendment to the PDF, the Executive recommended (and the Council approved) a revised project schedule that shows project completion in FY11, four years later than indicated in original PDF. The FY08 amendment estimated project costs at $12.0 million, an increase of $0.7 million which DPWT attributes to the effects of inflation over the extended project period.

Noteworthy:

- In FY07, $36,000 was transferred from this project to the Advance Reforestation project.

[3] The Council approved a Nebel Street Extended PDF for FY03 that only included funding for project planning and design. FY05 was the first year that the project PDF estimated the full cost of this project.

Current Project #6: Nebel Street Extended (through FY08)

Table A: Comparison of Original and FY08 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY08 Approved Cost Estimate	Percent Variation FY08 Estimate Compared to:	
	FY05 $	Inflated $		FY05 $	Inflated $
Planning, Design & Supervision	$680	$688	$673	-1.0%	-2.1%
Land	$6,190	$7,049	$6,392	3.3%	-9.3%
Site Improvements/Utilities	$446	$464	$494	10.8%	6.5%
Construction/Other	$3,936	$4,097	$4,452	13.1%	8.7%
Total	**$11,252**	**$12,298**	**$12,011**	**6.7%**	**-2.3%**
Non-County Revenue	$0	$0	$0		
Total Cost to County	**$11,252**	**$12,298**	**$12,011**	**6.7%**	**-2.3%**

Expenditures/Encumbrances to Date (as of 1/08): $2.4 million

Table B: Comparison of Original and FY08 Approved Estimated Schedule

	Original Estimate	FY08 Estimate
Start Project	FY05	FY05
Start Construction	FY07	FY10
Complete Project	FY07	FY11
Project Duration	3 years	7 years

Facility Planning History

- Project in Facility Planning for 5 years (FY99 through FY03)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Complex and lengthy negotiations with property owners regarding a series of land acquisition issues

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #4: NEBEL STREET EXTENDED (CE's Recommended FY09-14 CIP)

CE Recommended FY09 Changes in Project Description/Scope: None

CE Recommended Cost Change: The Executive's recommended FY09-15 CIP shows a $1.9 million increase for the Nebel Street Extended project as compared to the PDF approved by the Council for FY08. The Executive attributes this cost increase to "increases in land costs, construction costs, and construction management costs due to the delays associated with the property acquisition."

CE Recommended Schedule Change: The Executive's recommended FY09-15 CIP anticipates that the Nebel Street Extended project will be completed in FY11, the same year as indicated in the PDF approved by the Council for FY08.

Current Project #6: Nebel Street Extended (includes CE's FY09 recommendations)

Table A: Comparison of Original and FY09 Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY09 CE Recommended	Percent Variation FY09 Estimate Compared to:	
	FY05 $	Inflated $		FY05 $	Inflated $
Planning, Design & Supervision	$680	$688	$758	11.5%	10.2%
Land	$6,190	$7,049	$7,487	21.0%	6.2%
Site Improvements/Utilities	$446	$464	$94	-78.9%	-79.7%
Construction/Other	$3,936	$4,097	$5,592	42.1%	36.5%
Total	**$11,252**	**$12,298**	**$13,931**	**23.8%**	**13.3%**
Non-County Revenue	$0	$0	$0		
Total Cost to County	**$11,252**	**$12,298**	**$13,931**	**23.8%**	**13.3%**

Expenditures/Encumbrances to Date (as of 1/08): $2.4 million

Table B: Comparison of Original and FY09 Estimated Schedule

	Original Estimate	FY09 Estimate
Start Project	FY05	FY05
Start Construction	FY07	FY10
Complete Project	FY07	FY11
Project Duration	3 years	7 years

Facility Planning History

- Project in Facility Planning for 5 years (FY99 through FY03)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

FY09 County Executive Recommended Changes to Project Cost and Schedule

- CE recommends adding $1.9 million for increased land acquisition and construction costs
- CE anticipates project completion in FY11, the same year as indicated in the FY08 approved PDF

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #7: REDLAND ROAD (Through FY08)

First Year as Stand-Alone CIP Project: FY00

Current Project Description: This project provides for the reconstruction and widening of Redland Road from Crabbs Branch Way to Baederwood Lane. In addition, the project provides for improvements to the Redland Road intersections with Crabbs Branch Way and with Needwood Road. The project also includes construction of a combined bike path and sidewalk.

Facility Planning History: Planning for reconstruction of Redland Road originated as a spot improvement to the intersection with Crabbs Branch Way. Initial planning for this work was funded through the Intersection and Spot Improvements PDF. The larger project from Crabbs Branch Way to Baederwood Lane was never included in the Facility Planning PDF. DPWT reports that it had completed conceptual project planning equivalent to Facility Planning Phase I by the time this project was created as a stand-alone PDF.

CIP Project History/Major Change(s) in Scope: At the request of the Executive, the Council approved the Redland Road project as an amendment to the FY99–04 CIP. Preliminary design work for the Redland Road improvements began in FY00. The revised PDF approved in the FY03–08 CIP changed the project scope to expand the pavement width to accommodate a reversible lane. A year later, the Executive modified the PDF to add two on-road bike lanes to conform with a recent amendment to the County's Master Plan of Bikeways. In response to public comments on the revised scope, the Executive amended the PDF in FY05 to delete the reversible lane and on-road bike lanes from the project scope. DPWT estimates the planning and design costs incurred from inclusion and subsequent deletion of the reversible lane and on-road bike lanes at about $1.0 million.

In 2004, the Department of Environmental Protection (DEP) requested that DPWT rebuild a failing stormwater management pond dam that abuts Redland Road near the intersection with Crabbs Branch Way. DPWT revised the project plans, acquired additional permits, and adjusted its construction schedule to rebuild the dam's retaining walls. DPWT estimates that dam repair work added about $400,000 to project costs.

DPWT redesigned the project with each change in project scope and delayed the beginning of construction for a total of five years (from FY01 to FY06) while the project scope remained in flux. The most recently approved PDF indicates that completion of the Redland Road project will occur in FY09.

Noteworthy:

- DEP contributed $150,000 for reconstruction of the stormwater management pond dam.

Current Project #7: Redland Road (through FY08)

Table A: Comparison of Original and FY07 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY07 Approved Cost Estimate	Percent Variation FY07 Estimate Compared to:	
	FY00 $	Inflated $		FY00 $	Inflated $
Planning, Design & Supervision	$306	$321	$1,369	347.4%	326.5%
Land	$100	$121	$218	118.0%	80.2%
Site Improvements/Utilities	$490	$490	$699	42.7%	42.5%
Construction/Other	$1,000	$1,000	$2,679	167.9%	167.9%
Total	**$1,896**	**$1,933**	**$4,965**	**161.9%**	**156.9%**
Non-County Revenue	$0	$0	$161		
Total Cost to County	**$1,896**	**$1,933**	**$4,804**	**153.4%**	**148.6%**

Expenditures/Encumbrances to Date (as of 1/08): $1.7 million

Table B: Comparison of Original and FY07 Approved Estimated Schedule

	Original Estimate	FY07 Estimate
Start Project	FY00	FY00
Start Construction	FY01	FY06
Complete Project	FY02	FY09
Project Duration	3 years	10 years

Facility Planning History

- Project originated as intersection improvements and did not go through formal Facility Planning
- Concept planning complete when created as stand alone CIP project

Concept Stage (Facility Planning Stage 1)	Preliminary Design (Facility Planning Stage 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Scope change -- addition and subsequent deletion of a reversible lane and on-road bike lanes

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #7: REDLAND ROAD (CE's Recommended FY09-14 CIP)

CE Recommended FY09 Changes in Project Description/Scope: Modification to the design of the Redland Road/Crabbs Branch Way intersection improvements to conform to State environmental regulatory requirements and to improve pedestrian safety.

CE Recommended Cost Change: The Executive's recommended FY09-15 CIP shows a $0.5 million increase for the Redland Road project as compared to the PDF approved by the Council for FY07. The Executive attributes this cost increase to "revisions to the Redland/Crabbs Branch Way intersection geometry for pedestrian safety and Maryland Department of the Environment regulated work scope changes and higher materials costs."

CE Recommended Schedule Change: The Executive's recommended FY09-15 CIP anticipates that the Redland Road project will be completed in FY10, one year later than indicated in the PDF approved by the Council for FY07.

Current Project #7: Redland Road (includes CE's FY09 recommendations)

Table A: Comparison of Original and FY09 Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY09 CE Recommended	Percent Variation FY09 Estimate Compared to:	
	FY00 $	Inflated $		FY00 $	Inflated $
Planning, Design & Supervision	$306	$321	$1,504	391.5%	368.5%
Land	$100	$121	$124	24.0%	2.5%
Site Improvements/Utilities	$490	$490	$69	-85.9%	-85.9%
Construction/Other	$1,000	$1,000	$3,759	275.9%	275.8%
Total	**$1,896**	**$1,933**	**$5,456**	**187.8%**	**182.3%**
Non-County Revenue	$0	$0	$175		
Total Cost to County	**$1,896**	**$1,933**	**$5,281**	**178.5%**	**173.3%**

Expenditures/Encumbrances to Date (as of 1/08): $1.7 million

Table B: Comparison of Original and FY09 Estimated Schedule

	Original Estimate	FY09 Estimate
Start Project	FY00	FY00
Start Construction	FY01	FY06
Complete Project	FY02	FY10
Project Duration	3 years	11 years

Facility Planning History

- Project originated as intersection improvements and did not go through formal Facility Planning
- Concept planning complete when created as stand alone CIP project

Concept Stage (Facility Planning Stage 1)	Preliminary Design (Facility Planning Stage 2)	Final Design/ Land Acquisition	Construction

FY09 County Executive Recommended Changes to Project Cost and Schedule

- CE recommends adding $0.5 million for modified intersection design and for increased materials costs
- CE anticipates project completion in FY10, one year later than in the FY07 approved PDF

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #8: STRINGTOWN ROAD EXTENDED

First Year as Stand-Alone CIP Project: FY03

Current Project Description: This project provides for the extension of Stringtown Road from Frederick Road to I-270 (2,400 linear feet). The project also includes a sidewalk, bike path, street lighting, and tree planting.

Facility Planning History: The Stringtown Road Extended project appeared in the Facility Planning PDF from FY99 through FY00. DPWT reports that it had completed preliminary design (Facility Planning Stage 2) prior to creation of Stringtown Road Extended as a stand-alone CIP project.

CIP Project History/Major Change(s) in Scope: The Executive recommended (and the Council approved) creation of the Stringtown Road Extended PDF as part of the FY03-08 CIP. The County has negotiated with an adjacent property developer to dedicate a portion of the right-of-way and to construct the segment of the Stringtown Road from Frederick Road to Gateway Center Drive.

Stringtown Road Extended opened to traffic in September 2007. DPWT expects to complete the project by the end of FY08, one year later than indicated in the approved PDFs. DPWT attributes the delay to three factors. DPWT delayed construction of the easternmost section of the project while awaiting completion of improvements to the Stringtown Road – Frederick Road intersection by a private developer. In addition, relocation of utility lines is taking more time than anticipated by DPWT. Finally, DPWT had to engage in unanticipated negotiations with M-NCPPC, landowners, and developers to secure, remove, and restore a historic marker location in the project area.

As Stringtown Road Extended is scheduled for completion in FY08, the Executive's FY09-14 recommended CIP does not include an updated PDF for this project.

Noteworthy:

- A private developer has contributed $970,000 to the project.
- In FY07, $20,000 was transferred from this project to the Advance Reforestation project.

Current Project #8: Stringtown Road Extended (through FY08)

Table A: Comparison of Original and FY07 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY07 Approved Cost Estimate	Percent Variation FY07 Estimate Compared to:	
	FY03 $	Inflated $		FY03 $	Inflated $
Planning, Design & Supervision	$1,646	$1,736	$1,459	-11.4%	-16.0%
Land	$1,072	$1,297	$487	-54.6%	-62.5%
Site Improvements/Utilities	$1,330	$1,561	$1,296	-2.6%	-17.0%
Construction/Other	$4,782	$5,613	$5,568	16.4%	-0.8%
Total	**$8,830**	**$10,208**	**$8,810**	**-0.2%**	**-13.7%**
Non-County Revenue	$90	$96	$970		
Total Cost to County	**$8,740**	**$10,112**	**$7,840**	**-10.3%**	**-22.5%**

Expenditures/Encumbrances to Date (as of 1/08): $8.4 million

Table B: Comparison of Original and FY07 Approved Estimated Schedule

	Original Estimate	FY07 Estimate
Start Project	FY03	FY03
Start Construction	FY06	FY06
Complete Project	FY07	FY07
Project Duration	5 years	5 years

Facility Planning History

- Project in Facility Planning for 2 years (FY99 through FY00)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- Private developer contributed $970,000 to the project
- Greater than anticipated time to relocate utility lines

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #9: WOODFIELD ROAD EXTENDED (Through FY08)

First Year as Stand-Alone CIP Project: FY01

Current Project Description: This project provides for the extension of Woodfield Road from the north side of the Damascus Shopping Center to Ridge Road (3,000 linear feet). The project also provides for realignment of Faith Lane and the construction of a segment of Ridge Road from south of Faith Lane to north of Gue Road (1,450 linear feet). The project also includes installation of street lighting and right-of-way landscaping.

Facility Planning History: The Woodfield Road Extended project appeared in the Facility Planning PDF from FY97 through FY99. DPWT reports that it had completed preliminary design (Facility Planning Stage 2) prior to creation of the project as a stand-alone PDF.

CIP Project History/Major Change(s) in Scope: Planning and design work for Woodfield Road Extended as a stand-alone CIP project was originally to begin in FY01. However, the design firm that had performed the Facility Planning work failed to submit a timely response to the contract renewal solicitation and so was ineligible to perform final design. The County re-bid the design contract resulting in a one year delay in the project.

Changes in project scope and longer than anticipated permit approvals contributed to delaying the project an additional two years. The Executive eliminated improvements to Ridge Road north of Gue Road from the project scope in the FY05 PDF because of fiscal constraints. The Council approved the revised FY05 PDF as recommended by the Executive.

The U.S. Army Corps of Engineers and the Maryland Department of the Environment did not approve permits for the County's original wetland mitigation plan. Federal and State regulators required DPWT to identify alternative wetland mitigation sites and to redesign a culvert under the roadway to receive permit approval.

As part of the original project scope, DPWT had intended to meet forest conservation requirements by adding trees off-site (near the Triadelphia Reservoir). During a mandatory referral review in 2006, the Planning Board recommended that DPWT reforest within the project watershed. DPWT currently is engaged in negotiations with a nearby property owner for a six-acre reforestation easement.

DPWT also attributes project delays, in part, to staffing constraints. The most recently approved PDF indicates that completion of the Woodfield Road project will occur in FY08.

Noteworthy:

- In FY07, $67,000 was transferred from this project to the Advance Reforestation project.

Current Project #9:Woodfield Road Extended (through FY08)

Table A: Comparison of Original and FY07 Approved Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY07 Approved Cost Estimate	Percent Variation FY07 Estimate Compared to:	
	FY01 $	Inflated $		FY01 $	Inflated $
Planning, Design & Supervision	$1,409	$1,506	$2,058	46.1%	36.6%
Land	$945	$1,180	$1,805	91.0%	53.0%
Site Improvements/Utilities	$1,205	$1,374	$813	-32.5%	-40.8%
Construction/Other	$4,641	$5,137	$6,767	45.8%	31.7%
Total	**$8,200**	**$9,197**	**$11,443**	**39.5%**	**24.4%**
Non-County Revenue	$0	$0	$212		
Total Cost to County	**$8,200**	**$9,197**	**$11,231**	**37.0%**	**22.1%**

Expenditures/Encumbrances to Date (as of 1/08): $2.5 million

Table B: Comparison of Original and FY07 Approved Estimated Schedule

	Original Estimate	FY07 Estimate
Start Project	FY01	FY01
Start Construction	FY04	FY07
Complete Project	FY05	FY08
Project Duration	5 years	8 years

Facility Planning History

- Project in Facility Planning for 3 years (FY97 through FY99)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

Significant Events/Occurrences that Affected Project Cost or Schedule

- One-year project delay resulting from need to re-bid design contract
- Unanticipated delays related to wetland permitting and reforestation

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CURRENT PROJECT #9: WOODFIELD ROAD EXTENDED (CE's Recommended FY09-14 CIP)

CE Recommended FY09 Changes in Project Description/Scope: Additional environmental permitting requirements.

CE Recommended Cost Change: The Executive's recommended FY09-15 CIP shows a $3.1 million increase for the Woodfield Road Extended project as compared to the PDF approved by the Council for FY07. The Executive attributes this cost increase to "higher material costs and additional permitting requirements."

CE Recommended Schedule Change: The Executive's recommended FY09-15 CIP anticipates that the Woodfield Road Extended project will be completed in FY11, three years later than indicated in the PDF approved by the Council for FY07. The recommended PDF states that the "two year construction delay is due to locating and obtaining a viable wetland mitigation site from regulatory agencies and resource constraints."

Current Project #9: Woodfield Road Extended (includes CE's FY09 recommendations)

Table A: Comparison of Original and FY09 Cost Estimate (Dollars in $1,000s)

	Original Cost Estimate		FY09 CE Recommended	Percent Variation FY09 Estimate Compared to:	
	FY01 $	Inflated $		FY01 $	Inflated $
Planning, Design & Supervision	$1,409	$1,506	$2,453	74.1%	62.8%
Land	$945	$1,180	$2,199	132.7%	86.4%
Site Improvements/Utilities	$1,205	$1,374	$570	-52.7%	-58.5%
Construction/Other	$4,641	$5,137	$9,305	100.5%	81.1%
Total	**$8,200**	**$9,197**	**$14,527**	**77.2%**	**57.9%**
Non-County Revenue	$0	$0	$168		
Total Cost to County	**$8,200**	**$9,197**	**$14,359**	**75.1%**	**56.1%**

Expenditures/Encumbrances to Date (as of 1/08): $2.5 million

Table B: Comparison of Original and FY09 Estimated Schedule

	Original Estimate	FY09 Estimate
Start Project	FY01	FY01
Start Construction	FY04	FY08
Complete Project	FY05	FY11
Project Duration	5 years	11 years

Facility Planning History

- Project in Facility Planning for 3 years (FY97 through FY99)
- Project created as stand alone CIP project after completion of preliminary design

Concept Stage (Facility Planning Phase 1)	Preliminary Design (Facility Planning Phase 2)	Final Design/ Land Acquisition	Construction

FY09 County Executive Recommended Changes to Project Cost and Schedule

- CE recommends adding $3.1 million for increased materials costs and additional permitting requirements
- CE anticipates project completion in FY11, three years later than in the FY07 approved PDF

Sources: Department of Public Works and Transportation; Office of Management and Budget; Department of Finance

CHAPTER VI. ROAD PROJECT PRACTICES IN OTHER JURISDICTIONS

This chapter describes three road project estimation and management practices adopted in other jurisdictions. This chapter briefly describes practices identified by OLO that may be of interest to the Council in its oversight role of the County's capital program. This chapter consists of three sections:

> Section A, **Risk-Based Cost and Schedule Estimation,** describes an alternative approach to presenting capital project cost and schedule estimates.
>
> Section B, **Constructability Reviews**, describes a practice of including private contractors in the pre-construction review of roadway design plans.
>
> Section C, **Design-Build Contracting**, describes a practice in which a government enters into a single contract for both the design and construction of a capital project.

A. Risk-Based Cost and Schedule Estimation

As mentioned in Chapter II, DPWT generally assumes that no major changes in scope or requirements will occur during the life of the project. County PDFs do not take into account the level of uncertainty in estimating project costs and schedule. In contrast, "risk-based" cost and schedule estimates provide policy and budget decision-makers as well as the public an understanding of the potential variability in project outcomes.

The Washington State Department of Transportation (WSDOT) has initiated a risk-based approach to preparing and presenting road construction cost and schedule estimates. The WSDOT "Cost-Risk Assessment" is predicated on the concept that the ultimate cost and schedule of a project is subject to many variables that cannot be known during the planning stage. This approach emphasizes that a single cost (or schedule) estimate represents only one of multiple possible outcomes. Instead of presenting road project cost and schedule estimates as single numbers, WSDOT requires project managers to produce cost and schedule ranges based on the probability of different variables occurring.[1]

As illustrated in Exhibit 7 on the following page, WSDOT Cost and Risk Status Reports present a range of cost estimates. The reports indicate estimated costs at 10%, 50%, and 90% probability levels. The probability of varying cost estimates are linked to an identified list of program risks (shown in the lower left side of the exhibit). WSDOT cost estimation guidelines inform project managers how to calculate cost ranges based on the uncertainty level of different potential risks. WSDOT Cost and Risk Status Reports also show key assumptions used in preparing cost and schedule estimates.

[1] Washington State Department of Transportation, *Cost Risk Assessment*, 2007 http://www.wsdot.wa.gov/projects/projectmgmt/riskassessment

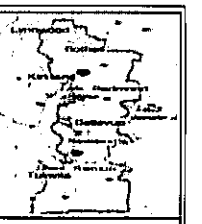
Exhibit 7. Sample Washington State DOT Cost and Risk Status Report

I-405 Congestion Relief and Bus Rapid Transit Projects

Revised July 2003

Scenario

Tukwila to Bothell (Option C)



Project Descriptions:

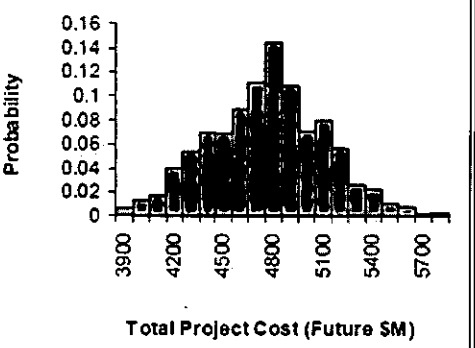
- Continuous multi-modal corridor improvement projects from I-5 in Tukwila to SR 522 in Bothell.
- Adds one lane each direction from I-5 to SR 181 in Tukwila.
- Adds two lanes each direction from SR 181 in Tukwila to I-90 in Bellevue.
- Adds one lane each direction from I-90 in Bellevue to SR 522 in Bothell.
- On SR 167, adds one lane between I-405 and S. 180th St.
- Constructs Bus Rapid Transit system with stations, HOV direct access ramps and Park & Ride lots and coaches.
- Expands the vanpool program.

Schedule:

Begin Construction Range: 2006-2007

End Construction Range: 2013-2014

CEVP Result:



Project Cost Range:

10% chance the cost < $ 4.2 Billion

50% chance the cost < $ 4.7 Billion

90% chance the cost < $ 5.1 Billion

Project Benefits:

- Reduces congestion and improves freight movement.
- Provides bus rapid transit system from SeaTac to Lynnwood.
- Constructs 2300 new Park & Ride spaces.
- Adds 600 new vanpools and increases commute reduction programs.
- Improves water resources.

What's Changed Since 2002:

- Scope: Project limits are smaller.
- Schedule: Begin construction range has been delayed up to one year. End construction range has been accelerated two years.
- Costs: Costs have gone down approximately $1 billion due to scope revisions.
- Risk Management: Identifying new strategies for improved environmental clearances and right-of-way processes. Coordinating decision strategies with FHWA.

Project Risks:

- Changing environmental requirements for project mitigation (stormwater, wetlands, fish resources and streams) may increase project costs--primarily for added right-of-way purchases.
- Delays in right-of-way purchases may result in construction delays and project cost increases.
- Early stage of project development leads to scope uncertainty.
- Legal challenges and delays in obtaining environmental permits may result in project delay.
- Utility relocations may require extra time to negotiate and complete.

Financial Fine Print (Key Assumptions):

- Full project funding becomes available in July 2005. State I-405 Nickel funds will roll-over into this package.
- Inflation escalation is to 2010, the approximate midpoint of construction.
- Additional federal, state, regional and local money may be needed.
- Project cost range includes $18.5 million in past expenses, beginning in 1999.
- Assumes funding decisions do not interrupt or cause construction delays.

Level of Project Design: Low — Medium — High

July 16, 2003

Washington State Department of Transportation

B. Constructability Reviews

Highway administrations in at least 11 states perform "constructability reviews" of roadway designs before sending out a bid solicitation for project construction. Constructability reviews involve a formal review of design documents by private sector contractors. Contractors review design specifications to determine the level of difficulty of construction, to identify errors and omissions, and to suggest design revisions that could improve the end product, reduce costs, or save time.

A recent report to the Transportation Research Board of the National Academies of Science suggests that constructability review improves the road development process by reducing conflict between project designers and contractors. The report further encourages these reviews early in the design process:

> Constructability review is most effective when contractor input is sought during the preliminary design phase, not just before the bidding process begins. It is much easier to implement changes in philosophy early in the design process, instead of waiting until the design effort is nearly complete.[2]

In 2001, the American Association of State Highway Transportation Officials (AASHTO) endorsed the use of constructability reviews as a recommended practice for state highway agencies. AASHTO found that "constructability reviews ... have the potential to improve the quality of construction plans and specifications, reduce project changes and cost increases, reduce construction project delays, and provide a higher quality constructed product."[3]

C. Design-Build Contracting

As mentioned in Chapter II, DPWT awards separate contracts for design and for construction of road projects. An alternative approach is known as "design-build" contracting. In design-build contracting, a government enters into a single contract for both the design and construction of a capital project.

Design-build contracts may shorten project duration by allowing some overlap of the design and construction phases of a project. With a single contractor performing both functions, construction may begin before final design is complete.

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[2] *Contracting Methods for Highway Construction,* Donn E. Hancher, Transportation Research Board of the National Academies of Science, 2007

[3] American Association of State Highway Transportation Officials, http://cms.transportation.org/sites/construction/docs/2001Resolutions.pdf

Design-build contracts make a single party accountable for cost and schedule. The design-build approach may prevent unexpected cost increases and delays by requiring the contractor to assume the financial risk for some changes in project design. However, design-build does not preclude cost increases or delays resulting from government decisions to change a project's scope.

There are also potential disadvantages to the design-build approach. Bidders may request greater compensation for design-build contracts to account for their higher level of risk. In addition, design-build contracting offers the government less management control over the project.

The U.S. Department of Transportation and many state highway administrations have used design-build contracting for select projects in recent years. The Maryland State Highway Administration has awarded a design-build contract for improvements to the Route 355/Montrose Road-Randolph Road intersection.

CHAPTER VII. FINDINGS

This chapter presents OLO's findings from the study of County road construction project cost and schedule estimates. The chapter identifies trends and themes that emerge from review of the 14 projects described in detail in Chapters IV and V of this report.[1] Table 1 lists the 14 projects in ascending order of original cost estimate and indicates whether the project is already complete or is currently ongoing.

Table 1: List of Road Projects and Original Cost Estimates

	Completed or Current	Original Cost Estimate	Actual/ Most Recent Estimated Cost
Muncaster Road	Completed	$1,510	$3,126
Valley Park Drive	Completed	$1,745	$3,063
Redland Road	Current	$1,896	$5,456
Greencastle Road	Current	$2,550	$3,507
Citadel Avenue	Current	$3,050	$5,407
Burtonsville Access Road	Current	$3,745	$7,949
Shady Grove Road	Completed	$4,250	$4,634
Germantown Road Extended	Completed	$4,628	$6,148
Briggs Chaney Road	Completed	$6,608	$6,447
Woodfield Road Extended	Current	$8,200	$14,527
Stringtown Road Extended	Current	$8,830	$8,810
Fairland Road	Current	$10,536	$10,945
Nebel Street Extended	Current	$11,252	$13,931
Montrose Parkway West	Current	$61,856	$70,378
Total		**$130,656**	**$164,328**

Source: DPWT, OMB, Finance

This chapter includes eight sections:

Section A, **Summary of Key Factors that Affect Road Project Cost and Schedule,** describes ten factors that affect cost and schedule estimates.

Section B, **Information Known about Key Factors at Time of Initial Cost and Schedule Estimates,** lists the information that is knowable at the time of initial cost and schedule estimates and the information that cannot be known at that time.

[1] In this chapter, the phrase "most recent estimate" refers to an estimate in either the last approved PDF or, when applicable, in the Executive's recommended FY09-14 CIP.

Section C, **Variations from Original Cost Estimates,** presents summary data on cost changes for the 14 projects studied in this report.

Section D, **Variations from Original Cost Estimates by Expenditure Category,** summarizes changes in costs by expenditure type for the 14 projects.

Section E, **Changes in the Rate of Cost Increase,** presents data on average growth in project cost from the initial approved PDF to each subsequent approved PDF.

Section F, **Comparison of Actual Costs and Cumulative Appropriations,** compares actual project costs with the total cumulative appropriations for the five completed road projects studied in this report.

Section G, **Comparison of Estimated and Actual Project Duration,** presents summary data on schedule changes for the 14 projects studied in this report.

Section H, **Correlation between Facility Planning and Accuracy of Cost and Schedule Estimates,** describes differences in the accuracy of cost and schedule estimates for projects that had and had not completed the preliminary design phase of Facility Planning.

Section I, **Practices in other Jurisdictions,** describes three road project estimation and management practices adopted in other jurisdictions.

A. Summary of Key Factors that Affect Road Project Cost and Schedule

This section describes ten factors that affected the costs and schedules of the 14 projects studied in this report. These factors both:

- Shaped the original project cost and schedule estimates; and,
- Explain variations between the original estimates and the final project costs and schedules.

Each of the following ten factors affected the original project cost and schedule estimates prepared by DPWT for County road projects. However, no single factor represents the primary cause for changes from the original estimates. OLO found that different combinations of these factors caused cost increases or delays in the road projects studied in this report.

Factor #1. Project Scope

At the conclusion of preliminary design, DPWT prepares a detailed scope that specifies project design elements including right-of-way width, roadway alignment, intersection geometrics, stormwater management and sediment control plans, permit requirements, and construction sequence. Based on this information, DPWT prepares cost and schedule

estimates for inclusion in a proposed first project PDF. Future changes to the scope likely will affect the project's cost and schedule. Through the CIP process, the Council has approved modifications to the original scope of some existing road projects to respond to concerns raised by regulatory agencies, the public, and other stakeholders.

Factor #2. Land Acquisition

The County needs to acquire land for most road projects. For some roads in newly created rights-of-way, the County acquires multiple whole parcels of land. Most commonly, the County acquires portions of property at the edges of the project area. For some projects, the County also acquires "perpetual easements" to preserve permanent access to land and "temporary easements" to access and use land for a finite period of time during project construction.

The County negotiates with property owners to determine the compensation for land acquired for a road project. Maryland law authorizes the County under certain circumstances to acquire land for public road improvements prior to reaching a compensation agreement with the property owner. With authorization from the Council, the County Government has used the "Advanced Taking" process to condemn land to allow road projects to proceed while awaiting final determination of the compensation amount.

In preparing the first PDF for a project, DPWT makes assumptions about the land values, the length and width of the right-of-way, and the amount of time needed to acquire land. Differences between these assumptions and actual experience could alter the project's cost and schedule.

Factor #3. Utility Relocation

Utility companies routinely locate lines above- or below-ground in County rights-of-way. Utility lines commonly found in rights-of-way include water, sewer, electric, gas, cable television, telephone, and telecommunications. Most County road projects occur in existing rights-of-way that include numerous utility lines. DPWT requires the relocation of existing utility lines when widening existing roads and constructing new roads, sidewalks, and bikeways. For many projects, utility relocation requirements significantly influence project cost and schedule. Some projects experience cost increases and delays resulting from unanticipated utility relocation. Moreover, the County does not have the authority to enforce the timely design or implementation of work performed by utility companies.

Factor #4. Laws, Regulations, and Policies

DPWT's road construction program operates within the framework of environmental and other legal, regulatory, and policy mandates. For example, projects must comply with requirements of the County road code, land use regulations, procurement regulations, and master plans. Changes to any of these requirements that occur prior to completion of a project may result in cost increases or delays.

Factor #5. Environmental Compliance

All road projects have stormwater management impacts and many have additional environmental impacts as well. Depending on the conditions in the project area, DPWT must secure permits and regulatory approvals for stormwater management, sediment control, wetland preservation, reforestation, and other environmental matters. For most projects, DPWT identifies the environmental permit requirements during the Facility Planning stage. However, until the permitting process during final design, it may be difficult for DPWT to anticipate the exact requirements of the permitting agency. On occasion, the requirements of one permitting agency conflict with the requirements of another. In some cases, DPWT has had to acquire unanticipated permits as a result of a scope change or the discovery of new information.

Factor #6. Surrounding Development

In most cases, DPWT road projects abut property with existing or planned development. DPWT designs road projects to provide proper ingress and egress to developments and to limit the amount of property and structures taken or otherwise affected by project construction. Unanticipated development in and adjacent to project areas may prompt a redesign of certain elements of a road project. For example, approval of a new subdivision near a road project may necessitate changes in roadway alignment, utility relocation plans, or stormwater management plans. New development may also affect plans for detour routes during project construction.

Factor #7. Nearby Road Projects

Other ongoing or planned transportation improvements often influence the cost and schedule of a County road project. A County road project may connect to an intersection improvement being built by a private developer or may meet up with a highway interchange to be constructed by the State. In cases such as these, DPWT must coordinate design, construction sequencing, and detour route planning to accommodate the other project. Delays in State or developer road work could, in turn, postpone completion of a County project.

Factor #8. Cost Increases/Inflation

Road construction is a multi-year effort and so is susceptible to future year cost increases resulting from inflation and changing market conditions. The County's CIP displays the cost of multi-year projects in constant dollars, that is, in dollars current to that fiscal year without any inflation adjustment for future year expenditures. For most capital projects, inflation raises actual costs above original cost estimates. Project delays further magnify the effects of inflation on actual project costs.

Factor #9. Fiscal Conditions

County road projects compete with other capital and operating budget items for finite resources. At times, the Executive or Council will extend the time period for a road project because of fiscal constraints. Extending the schedule of a project also may produce cost increases resulting from the effects of inflation.

Factor #10. Procurement Process

DPWT uses the County's procurement process to solicit bids and award contracts for the design and construction of elements of road projects. In preparing a project PDF, DPWT must make certain assumptions about the amount of time needed to complete the procurement process and about the cost of the contracts awarded. Certain occurrences (such as unresponsive bidders or bid protests) may occur during the procurement process that cause a deviation from DPWT's original cost and schedule assumptions.

B. Information Known about Key Factors at Time of Initial Cost and Schedule Estimates

DPWT establishes original project cost and schedule estimates based on information known when the Department prepares the first project PDF. In preparing initial estimates, DPWT relies on the results of the Master Plan process and previous conceptual planning and preliminary design work. This work typically is performed as part of the Facility Planning process. The purpose of the Facility Planning process is to complete sufficient work on a project to develop accurate project cost and schedule estimates.

Preliminary design does not produce the final detailed specifications for road construction projects. The most detailed specifications of a road project are produced from engineering work performed during a stage known as "final design."

DPWT does not engage in final design until after the Council approves creation of the project in the CIP. Moreover, specific environmental permitting requirements generally are not known until after a project enters the CIP. Engineering, design, and permitting work conducted after the creation of a project helps DPWT refine project cost and schedule estimates in subsequent PDFs.

Table 2 on the following page lists the ten key factors that affect project cost and schedule and lists the types of information that could be known at the completion of preliminary design and the types of information that cannot be known at that time. As used in Table 2, "knowable" information refers to the types of information collected during the Facility Planning process. "Not knowable" information refers to project details, specifications, and estimates produced during final design; decisions and events that occur after Facility Planning; and conditions and externalities that are beyond the control or influence of the County Government.

Table 2: Information Knowable at the Completion of Facility Planning

	Information Knowable at Completion of Facility Planning	*Information Not Knowable at Completion of Facility Planning*
Project Scope	• Project scope resulting from preliminary planning, design, and engineering work • Estimated project cost and schedule	• Final design specifications • Scope changes approved after creation of stand-alone CIP project
Land Acquisition	• Approximate amount of land needed for right-of-way and easements • Estimated value of land	• Exact amount of land needed for right-of-way and easements • Willingness of property owners to sell • Changing real estate market values
Utility Relocation	• Locations of all recorded above-ground and below-ground utilities in the project area • Approximate sequencing of utility relocations relative to other construction tasks	• Locations of unrecorded below-ground utilities • Availability and work schedules of utilities' personnel • Actual utility relocation land acquisition needs
Laws, Regulations, and Policies	• Existing road construction, environmental, and land use regulatory requirements • Approved master plans and other policy documents	• Future regulatory and policy changes
Environmental Compliance	• Impact of project on water quality, wetlands, forests, and other environmental conditions • Environmental management and mitigation plans	• Exact permitting requirements including possible need to reconcile conflicting regulatory requirements • Environmental requirements resulting from changes in project scope • Legal challenges to permit approvals
Surrounding Development	• Existing and planned development in and around the project area	• Future development approvals in and around the project area
Nearby Road Projects	• Ongoing and planned roadway, interchange, or intersection improvements near project area	• Yet unplanned roadway, interchange, or intersection improvements near project area
Cost Increases/ Inflation	• Historic inflation rates for land, labor, and materials	• Future inflation rates for land, labor, and materials • Future market conditions
Fiscal Conditions	• Approximate project cost and likely available funding sources	• Other demands on County revenues • Future year fiscal conditions
Procurement Process	• Approximate contract solicitation and award period • Estimated contract costs	• Actual duration of contract solicitation and award period • Number of bidders; bid dollar amounts • Bid protests • Existing contractors not submitting timely bid responses • Bid/contract dollar amounts

C. Variations from Original Cost Estimates

Chapters IV and V of this report present the variations of County road project costs over the life of a project. Chapter IV describes five completed road projects and shows the variation between the original cost estimate and the actual cost[2] for each project. Chapter V describes nine current road projects and shows the variations between the original and most recent cost estimates.

Table 3 consolidates the cost variation data for all projects as measured both in constant and inflated dollars.[3] A positive percentage indicates an increase over the original cost estimate. A negative percentage indicates a decrease below the original estimate.

Table 3: Percent Increase (Decrease) of Road Project Costs

	Constant $	Inflated $
Completed Projects		
Briggs Chaney Road	-2.4%	-5.5%
Germantown Road Extended	32.9%	31.5%
Muncaster Road	107.0%	101.5%
Shady Grove Road	9.0%	3.5%
Valley Park Drive	75.5%	69.1%
Current Projects		
Burtonsville Access Road	112.3%	100.4%
Citadel Avenue	77.3%	46.5%
Fairland Road	3.9%	-11.4%
Greencastle Road	37.5%	16.8%
Montrose Parkway West	13.8%	-4.3%
Nebel Street Extended	23.8%	13.3%
Redland Road	187.8%	182.3%
Stringtown Road Extended	-0.2%	-13.7%
Woodfield Road Extended	77.2%	57.9%
Average (Mean)	**53.9%**	**42.0%**
Average (Median)	**35.2%**	**24.2%**

Source: DPWT, OMB, Finance, OLO

[2] Actual project cost represents actual expenditures and encumbrances charged to the project through January 2008. While all construction work is complete for these projects, some minor additional costs still may be charged to the project in the future.

[3] See Chapter IV, Section B for an explanation of constant and inflated dollars.

As shown in Table 3, the mean average variation in project cost was about 54% as measured in constant dollars and about 42% adjusted for inflation. The median cost increase was 35% or 24% when adjusted for inflation. As these calculations include currently unfinished projects, the actual average cost variations for the 14 projects likely will increase once all final project costs are known.

D. Variations from Original Cost Estimates by Expenditure Category

The project data sheets in Chapters IV and V show road project cost estimates by the four expenditure categories indicated in the CIP:

- Planning, Design, and Supervision;
- Land Acquisition;
- Site Improvements and Utilities; and
- Construction

Table 4 on the following page consolidates cost variation data by expenditure category for each project studied in this report. As the "Site Improvements and Utilities" line item funds activities that are similar to the "Construction" line item, OLO combined these two expenditure categories in Table 4. The table shows the variation between the original cost estimate and the actual cost by expenditure type for each completed project. For current projects, the table shows the variation between the original and the most recent cost estimates.

The percent variations shown in the table are based on changes in costs as measured in constant dollars. A positive percentage indicates an increase over the original cost estimate. A negative percentage indicates a decrease below the original estimate.

Table 4: Percent Increase (Decrease) of Road Project Costs By Expenditure Category (measured in constant dollars)

	Planning, Design Supervision	Land Acquisition	Site Improvements, Utilities, and Construction
Completed Projects			
Briggs Chaney Road	56.7%	148.5%	-16.7%
Germantown Road Extended	87.0%	18.0%	20.5%
Muncaster Road	139.3%	255.4%	83.9%
Shady Grove Road	67.1%	-94.4%	2.9%
Valley Park Drive	62.4%	-30.7%	96.6%
Current Projects			
Burtonsville Access Road	24.4%	393.8%	64.1%
Citadel Avenue	39.8%	145.6%	44.9%
Fairland Road	-10.7%	18.8%	3.8%
Greencastle Road	21.2%	-7.7%	47.0%
Montrose Parkway West	16.4%	11.3%	15.7%
Nebel Street Extended	11.5%	21.0%	29.8%
Redland Road	391.5%	24.0%	156.9%
Stringtown Road Extended	-11.4%	-54.6%	12.3%
Woodfield Road Extended	74.1%	132.7%	68.9%
Average (Mean)	**69.2%**	**70.1%**	**45.0%**
Average (Median)	**48.2%**	**19.9%**	**37.4%**

Source: DPWT, OMB, Finance, OLO

The data in the above table show that road projects experienced greater variability in "Land Acquisition" expenditures than in the other categories. Land acquisition expenditures varied from the original estimate over a wide range from a 94% decrease (Shady Grove Road) to a 394% increase (Burtonsville Access Road).

While the variations for "Planning, Design, and Supervision" and "Site Improvements, Utilities, and Construction" cluster around the median, land acquisition variations are much more widely scattered with significant outliers (particularly above the median). Only five of the fourteen projects experienced land cost changes within plus or minus 100% of the median change. In contrast, ten projects fell within this range for planning, design, and supervision and ten projects fell within this range for site improvements, utilities, and construction.

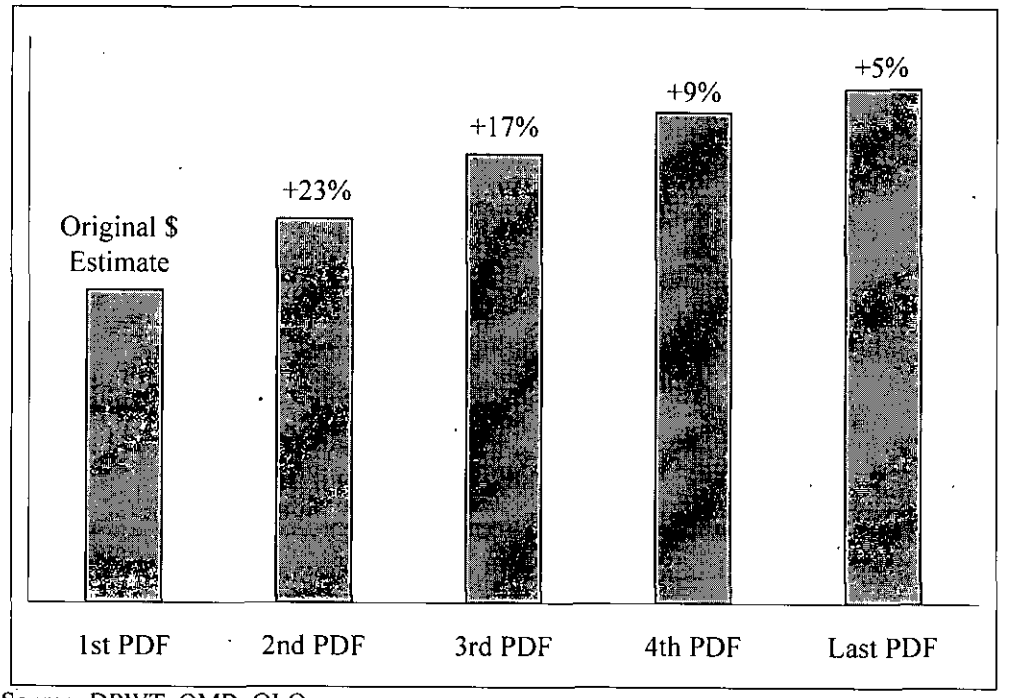
As these calculations include currently unfinished projects, the average actual cost increases by expenditure type likely will increase once all final project costs are known.

E. Changes in the Rate of Cost Increase

While costs increased above the original estimate for most road projects, the rate of increase was not constant throughout the life of the project. Most projects experienced their greatest cost increase early in the project's life. OLO measured the average growth in project cost (measured in constant dollars) from the initial approved PDF to each subsequent approved PDF.[4]

As shown in Exhibit 8, on average, project costs increased by 23% from the first to the second approved PDF. In each subsequent PDF, the rate of increase declined slowing to only 5% from the next to last PDF to the last PDF.[5] Greater cost increases likely occur early in the project life when the project is in the final design stage and project specifications are subject to change. The data suggest that costs become more stable as a project enters the construction phase. Once a project reaches construction, DPWT has firm information about several previously "not knowable" variables (such as final design specifications, permitting requirements, and land costs for most properties to be acquired).

Exhibit 8: Average Percent Cost Increase between Road Project Estimates



Source: DPWT, OMB, OLO

[4] The time between PDFs could be either two years (when a project did not have an off-year amendment) or one year (when Council approved an off-year amendment).

[5] The rate of increase shown for the last PDF reflects the percent increase compared to the previous PDF regardless of the number of PDFs approved over the life of a project. For the last PDF cost increase, OLO calculated the average rate of increase for the last PDF of all completed project and for those current projects scheduled to be complete by the end of FY09. This last PDF calculation excludes current projects scheduled to extend through FY10 and beyond.

F. Comparison of Actual Costs and Cumulative Appropriations

As part of its approval of the CIP (and CIP amendments), the Council appropriates annual funding for specific capital projects. The cumulative total of all annual appropriations represents the amount authorized by the Council to be spent on a project. OLO compared actual project costs with the total cumulative appropriations for the five completed road projects studied in this report.

On average, spending for the five completed projects fell 5.4% below the cumulative appropriation level. Data comparing the actual spending and cumulative appropriation levels for the nine current projects studied in this report will not be known until those projects are completed. OLO notes that the average difference between actual spending and appropriation levels for a population of 14 projects could differ from the average calculated for the relatively small set of five projects.

Table 5 shows the percent difference between actual cost and the cumulative appropriation for each of the five completed projects. A negative percentage indicates that the actual costs fell below the cumulative appropriation. A positive percentage indicates that actual costs exceeded the cumulative appropriation.

Table 5: Percent Difference between Actual Cost and Cumulative Appropriation for Completed Road Projects

Project	Percent Actual Cost Under Cumulative Appropriation
Briggs Chaney Road	5.2%
Germantown Road Extended	2.4%
Muncaster Road	15.5%
Shady Grove Road	3.9%
Valley Park Drive	0.1%
Average (Mean)	**5.4%**

Source: DPWT, OMB, Finance, OLO

As displayed in the table above, the actual cost for each of the five projects fell below the project's cumulative appropriation amount. For these projects, actual spending fell between 0.1% and 15.5% below the cumulative appropriation. As authorized by the County Charter, the Executive may transfer up to ten percent of an appropriation from one capital project to another within the same department.[6]

[6] County Charter, Section 309.

G. Comparison of Estimated and Actual Project Duration

Table 6 shows the increase in project duration for each project and the average increase among all fourteen projects.[7] The table compares the original estimated project duration with the actual duration for completed projects and compares the original estimate with the most recent estimate for current projects. On average, County road projects continued an average of 2.8 years beyond their original estimates.

Table 6: Variations in Road Project Duration from Original Estimate (Number of Years)

Completed Project	Original Estimate	Actual	Increase (Actual – Original)
Briggs Chaney Road	6	8	2
Germantown Road Extended	4	7	3
Muncaster Road	5	9	4
Shady Grove Road	6	6	0
Valley Park Drive	5	9	4
Current Project	**Original Estimate**	**Most Recent Estimate**	**Increase (Most Recent – Original)**
Burtonsville Access Road	4	7	3
Citadel Avenue	3	6	3
Fairland Road	6	6	0
Greencastle Road	4	6	2
Montrose Parkway West	7	7	0
Nebel Street Extended	3	7	4
Redland Road	3	11	8
Stringtown Road Extended	5	5	0
Woodfield Road Extended	5	11	6
Average	**4.7**	**7.5**	**2.8**

Source: DPWT, Finance, OLO

Because this study includes nine projects that are still in progress and may still experience additional delays in the future, the actual duration of these projects may exceed the number of years shown in Table 6.

[7] These calculations assume work during the entire fiscal year and do not adjust for partial years of work during the first and last year of a project.

OLO also calculated the duration of the design stage (pre-construction) and construction stages of the CIP road projects.[8] As shown in Table 7, the increase in project duration was primarily due to delays occurring during the design stage, which continued an average of 2.1 years beyond original estimates. The construction stage increased by an average of 0.7 year over original estimates.

Table 7: Average Increases in Road Project Duration by Stage (Number of Years)

CIP Project Stage	Original Estimate	Actual/ Most Recent Estimate	Increase (Actual – Original)
Design	2.8	4.9	**2.1**
Construction	1.9	2.6	**0.7**
Entire Project	4.7	7.5	**2.8**

Source: DPWT, OMB, OLO

For projects intended to increase roadway capacity, delays not only postpone the availability of planned capacity but also affect implementation of the County's Growth Policy. In calculating the adequacy of transportation facilities, the Council-approved Growth Policy allows new development to count capacity for transportation projects that are shown in the CIP to be complete within the next four fiscal years. A project that is delayed beyond four years may be prematurely counted in Growth Policy capacity calculations.

Underestimating project schedules also affects Council-approved spending affordability guidelines that control the amount of spending programmed in each year of the CIP. If a project is scheduled for completion in an unrealistically short period of time, then programmed spending would be artificially compacted during the estimated project duration and would crowd out other projects competing for the same fiscal capacity.

H. Correlation between Facility Planning and Accuracy of Cost and Schedule Estimates

As mentioned above, one purpose of the Facility Planning process is to complete sufficient work on a project to develop accurate project cost and schedule estimates. Facility Planning consists of two phases: conceptual planning (Phase 1) and preliminary design (Phase 2).[9] At the completion of preliminary design, DPWT should have enough information to develop cost and schedules estimates that are sufficiently accurate for inclusion in the CIP.

Of the 14 projects studied in this report, seven had completed the Facility Planning prior to their creation as a stand-alone CIP project; the other seven had not completed Facility Planning before being included in the CIP.

[8] To calculate the duration of the planning/design and construction stages, OLO assumed the construction began during the mid-point of the fiscal year.

[9] See Chapter II for descriptions of conceptual planning and preliminary design.

Projects entered the CIP before completion of Facility Planning for several different reasons. In some cases, the Executive recommended a project before the completion of preliminary design to prevent up to a two year delay before the next CIP cycle. In addition, some projects began as spot or intersection improvements, and so did not undergo Facility Planning, but eventually grew in scope into larger road projects.

OLO sought to test whether cost and schedule variations differed between projects that had completed preliminary design as compared to projects that had not. The data indicate a striking difference between projects that had completed Facility Planning and those that had not. Table 8 compares the average cost increases for the seven projects that had completed Facility Planning with the average increase for the seven projects that had not completed preliminary design. While projects that completed Facility Planning experienced an average cost increase of about 28 % (or 12% when adjusted for inflation), projects included in the CIP before completion of preliminary design experienced an average cost increase of 80% (or 72% when adjusted for inflation).

Table 8: Average Percent Increase in Road Project Cost from Original Estimate

	All Projects	Projects that had:	
		Completed Facility Planning	Not Completed Facility Planning
Average Cost Increase (Constant Dollars)	**53.9%**	**27.6%**	**80.3%**
Average Cost Increase (Inflated Dollars)	**42.0%**	**11.8%**	**72.2%**

Source: DPWT, OMB, Finance, OLO

Table 9 compares the average increase in the project duration for projects that completed Facility Planning with the projects that did not complete Facility Planning. Projects that did not complete Facility Planning experience an average delay of over three years, more than a year longer than projects that completed preliminary design.

Table 9: Average Increase in Road Project Duration from Original Estimate (Number of Years)

	All Projects	Projects that had:	
		Completed Facility Planning	Not Completed Facility Planning
Planning/Design	**2.1**	**1.7**	**2.4**
Construction	**0.7**	**0.4**	**1.0**
Total Duration	**2.8**	**2.1**	**3.4**

Source: DPWT, OMB, OLO

The Facility Planning process is intended to provide sufficient information to produce accurate and reliable estimates of project cost and schedule. The experience of recent County road projects suggests a correlation between the completion of the Facility Planning process and the accuracy of cost and schedule estimates. With a few exceptions, projects that completed Facility Planning had more accurate cost and schedule estimates than projects that entered the CIP before completion of Facility Planning.

I. Practices in other Jurisdictions

As detailed in Chapter VI, OLO identified three capital project management practices from other jurisdictions that may be of interest to the Council in its oversight role of the County's capital program.

- **Risk-Based Cost and Schedule Estimation:** The Washington State Department of Transportation (WSDOT) has initiated a risk-based approach to preparing and presenting road construction cost and schedule estimates. "Risk-based" cost and schedule estimates provide policy and budget decision-makers as well as the public an understanding of the potential variability in project outcomes. WSDOT assumes that the ultimate cost and schedule of a project is subject to many variables that cannot be known during the planning stage. Instead of presenting road project cost and schedule estimates as single numbers, WSDOT requires project managers to produce cost and schedule ranges based on the probability of different variables occurring. The probability of varying cost and schedule estimates are linked to an identified list of program risks.

- **Constructability Reviews:** Constructability reviews involve a formal review of design documents by private sector construction contractors. Contractors review design specifications to determine the level of difficulty of construction, to identify errors and omissions, and to suggest design revisions that could improve the end product, reduce costs, or save time. As mentioned in Chapter VI, the American Association of State Highway Transportation Officials (AASHTO) endorsed the use of constructability reviews as a recommended practice to improve the quality of construction plans, to reduce cost increases and delays, and to provide a higher quality product.

- **Design-Build Contracting:** In design-build contracting, a government enters into a single contract for both the design and construction of a capital project. Design-build contracts may shorten project duration by allowing some overlap of the design and construction phases of a project. The design-build approach may prevent unexpected cost increases and delays by requiring the contractor to assume the financial risk for some changes in project design. However, bidders may request greater compensation for design-build contracts to account for their higher level of risk. The Maryland State Highway Administration has awarded a design-build contract for improvements to the Route 355/Montrose Road-Randolph Road intersection.

CHAPTER VIII. RECOMMENDED DISCUSSION ISSUES

The Office of Legislative Oversight recommends that the Council discuss four issues relating to County road project cost and schedule estimates. Discussion of these issues should help the Council inform the Executive of its expectations regarding the presentation and timing of CIP recommendations as well as the management of costs and schedules.

Issue #1: Council expectations regarding CIP road project cost and schedule estimates.

Information available to the Council during CIP review does not clearly identify causes for changes in cost and schedule. As discussed in Chapter VII, some road project cost increases and delays result from unavoidable and unpredictable circumstances. In other cases, the cost increases and delays are a product of government decisions or contractor performance. Moreover, changes in cost and schedule may reflect imprecision in original estimates rather than work costing more or taking longer than needed.

In preparing initial road project cost estimates, DPWT determines the approximate quantities and unit costs for labor, materials, consulting, and supervision based on past experience and current market conditions. The Department includes an additional 15% to 40% in its cost estimates for unplanned contingencies. Based on these calculations DPWT prepares a new project PDF with costs estimated to the nearest $1,000.

To estimate the length of time needed to complete a road project, DPWT considers past project experience and the unique characteristics of the pending project. DPWT estimates the duration and sequencing of final design, land acquisition, site improvements, utility relocation, environmental compliance measures, and roadway construction.

DPWT generally assumes that no major changes in project scope or requirements will occur during the life of the project. PDFs generally do not indicate what unknowns or variables may change cost and schedule estimates.

As evidenced by the roads studied in this report, many County road projects experience a change of scope or encounter an unexpected obstacle after the Council initially approves the project in the CIP. These occurrences often cause costs increases and delays. For the 14 projects studied in this report, on average, costs increased by 54% (or 35% when adjusted for inflation) and project completion was delayed 2.8 years over the life of the project. Most commonly, the greatest cost increases and delays occur in the early years of a project before DPWT has completed final design (and in some cases, preliminary design) for the road. As projects approach closer to the construction phase, costs and schedules tend to stabilize.

OLO recommends that the Council discuss with the Executive Branch its expectations for initial road project cost and schedule estimates. Questions to consider include:

a. What should be the County's policy regarding the amount of contingency funding included in road project PDFs?

b. Should road project cost estimates include inflation estimates for future year expenditures?

c. Does the presentation of initial cost estimates rounded to the nearest $1,000 give the impression of a higher level of precision than is actually known?

d. Should the Executive provide information about the assumptions used in preparing cost and schedule estimates (for example, the amount of land to be acquired or the need for wetland mitigation)?

e. Should the Executive provide Council with information that addresses the risks and levels of uncertainty in road project cost and schedule estimates (similar to "risk-based" approach adopted by Washington State, see Chapter VI)?

Issue #2: The transition of road projects from Facility Planning to the CIP.

The Facility Planning process serves as a transition between identification of a potential road project and its inclusion as a stand-alone project in the CIP. The goal of Facility Planning is to study the need for the road, define the scope of the project, and create a cost and schedule estimate based on the information gathered.

Of the 14 road projects studied in this report, seven had not completed Facility Planning prior to their creation as a stand-alone CIP project. OLO found a correlation between the Facility Planning process and the accuracy of initial cost and schedule estimates. On average, projects that finished Facility Planning experienced smaller cost increases and delays than projects that entered the CIP before completion of Facility Planning.

Projects entered the CIP before completion of Facility Planning for different reasons. Some projects began as spot or intersection improvements but eventually grew in scope into larger road projects. In other cases, the Executive recommended creation of some road projects before they completed Facility Planning in order to avoid having to transmit a mid-cycle CIP amendment or having to wait two years until the next full CIP.

The Council may wish to consider how much planning and design is desirable to receive before approving a project in the CIP. Under current practice, detailed final design specifications remain undefined until after approval of a road project in the CIP. The County could invest resources to begin final design as part of Facility Planning so as to have more accurate cost and schedule information when a project is first proposed for the CIP. However, this redefinition of Facility Planning would raise sunk costs that would be lost should the Council decide not to complete a project.

OLO recommends that the Council discuss with the Executive Branch how road projects should transition from Facility Planning to the CIP. Questions to consider include:

a. Under what circumstances, if any, should the Executive recommend, and the Council approve, creation of a new CIP road project before the project has completed the Facility Planning process?

b. What is the preferred practice for a road project that has not completed Facility Planning in time to meet the regular CIP cycle? Should the Executive and Council consider the project for inclusion in the CIP before completion of Facility Planning? Should the project wait two years for consideration in the next CIP? Is a project of this sort appropriate for a mid-cycle CIP amendment?

c. For newly approved road projects, should two years elapse before the Council has an opportunity to review revised cost and schedule estimates?

d. Should DPWT begin final design for road projects before proposing them for inclusion in the CIP?

Issue #3: Strategies to minimize risk, control costs, and avoid delays.

DPWT contracts with the private sector to design and construct road projects. As discussed in Chapter II, County road design and construction contracts include some penalties for contractor failure to meet contract requirements and timelines but rarely offer incentives for early delivery or for high quality work. Moreover, the County generally does not use past contractor performance as a criterion for the award of future work.

As detailed in Chapter VI, other jurisdictions have employed contracting strategies to control costs and avoid delays. Some state highway administrations conduct "constructability reviews" wherein private sector construction contractors review design specifications to determine the level of difficulty of construction, to identify errors and omissions, and to suggest design revisions that could improve the end product, reduce costs, or save time.

Many states, including Maryland, have begun to test the merits of "design-build contracting." In design-build contracting, a government enters into a single contract for both the design and construction of a capital project. Design-build contracts may shorten project duration by allowing some overlap of the design and construction phases of a project.

OLO recommends that the Council discuss with the Executive Branch the advantages and disadvantages of alternative contracting strategies intended to share project risks with contractors. Questions to consider include:

a. Do opportunities exist to make greater use of incentives for high quality and timely work in road design and construction contracts?

b. Do County contracts have sufficient and proper penalties for design and construction contractors who provide low quality or late deliverables?

c. To what extent should the County use past contractor performance as a criterion for the award of future contracts?

d. Would the County benefit from using constructability reviews for road projects (see Chapter VI)?

e. Under what circumstances, if any, would design-build contracts be appropriate for County road projects (see Chapter VI)?

Issue #4: Consistency of funding approach for environmental costs resulting from road construction.

Environmental laws, regulations, and policies often require the County to mitigate the environmental impacts of road construction. CIP road projects frequently include funding for environmental mitigation efforts.

The transportation section of the CIP includes separate PDFs for two environmental mitigation programs. Chapter 22A of the County Code establishes requirements for replacement of trees lost during development ("reforestation"). To meet the reforestation requirements of road projects, the County has created the "Advance Reforestation" PDF in the CIP. This PDF funds off-site tree planting in designated reforestation areas to compensate for tree loss resulting from road construction.

Similarly, the CIP includes a "Highway Noise Abatement" PDF to fund the study, design, and construction of noise abatement measures along roadways consistent with the County's Highway Noise Abatement Policy.

The purpose of these PDFs is to consolidate funding for specific environmental initiatives. Instead of funding reforestation and noise control in multiple road projects, these PDFs combine expenditures at the program level.

The County funds other environmental efforts, such as wetland mitigation, directly from road project PDFs. OLO suggests that the Council discuss with the Executive whether spending for environmental mitigation of road construction should consistently be included in project-specific PDFs or should be funded through separate program-specific PDFs.

CHAPTER IX. AGENCY COMMENTS

The Office of Legislative Oversight circulated a final draft of this report to the Chief Administrative Officer (CAO) for Montgomery County. OLO greatly appreciates the time taken by County Government representatives to review the draft report and provide comments. OLO's final report incorporates technical corrections provided by County Government staff during the review period.

The written comments received from the CAO, with an attached memorandum from the DPWT Director, are included in their entirety, beginning on the following page.

OFFICES OF THE COUNTY EXECUTIVE

Isiah Leggett
County Executive

Timothy L. Firestine
Chief Administrative Officer

MEMORANDUM

January 29, 2008

TO: Karen Orlansky, Director
Office of Legislative Oversight

FROM: Timothy L. Firestine
Chief Administrative Officer

SUBJECT: OLO Report Number 2008-4
A Study of County Road Project Cost and Schedule Estimates

We have reviewed the final Draft OLO Report 2008-4, County Road Project Cost and Schedule Estimates. There is general concurrence with the report's content, findings and recommendations but we have several requested editorial changes for your consideration. We want to acknowledge the excellent work of OLO staff, Aron Tombka and Sara Downie, in pulling together many complex details into a document that is clear, concise, and direct. Further, we thank you for incorporating language in your report that addresses that the variance results for all fourteen projects included in the study may be different than the variance for the five completed projects.

Attached are the Department of Public Works and Transportation's comments on Transportation. There are a number of suggested editorial changes that broaden the discussion of some of the final draft issues addressed in the report. The department is in general concurrence with the report's findings and recommendations, but suggests that the Engineering News Record (ENR) construction cost index may not be the best indicator of market cost escalation for all types of projects. Further, Director Holmes suggests you may want to benchmark Montgomery County Government results with those of other jurisdictions and are submitted for your consideration.

We look forward to working with the Council and OLO in discussing the report and its findings.

TLF:dar

Attachment

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION

Isiah Leggett
County Executive

Arthur Holmes, Jr.
Director

MEMORANDUM

January 30, 2008

TO: Thomas J. Street, Assistant Chief Administrator Officer

FROM: Arthur Holmes, Jr., Director
Department of Public Works and Transportation

SUBJECT: FINAL DRAFT - Office of Legislative Oversight Report 2008-4
A Study of County Road Project Cost and Schedule Estimates

We have reviewed the draft report entitled "*A Study of County Road Project Cost and Schedule Estimates*," Report Number 2008-04 as prepared by the Office of Legislative Oversight. This report was authored by Aron Trombka and Sarah Downey.

We wish to acknowledge the work of Aron and Sarah for their professional and fair approach to performing this investigation and in drafting the report. We believe the report accurately summarizes the facility planning, design and construction process for county roads. With that said, we wish to point out that the process of designing and building County Roads is complex and there are many variables, in addition to those identified in the study, which impact both cost and schedule.

It is our opinion that the study affirms the value of the Facility Planning process prior to commencing the final design of the project. The study also validates our belief that cost estimates are more accurate when the project is further along in the design process. However, we recognize that there are opportunities for improvement to the process and we appreciate the study as a chance to observe where systematic improvements might be made. We also appreciate the suggestions that resulted from the brief review of the processes other agencies use and we will look into the value and agreement by others of assimilating those strategies into our planning, design and construction process, and how they are presented in the CIP.

The fourteen projects selected for study provide a range of the typical problems encountered during the course of the facility planning, design and construction process. However, it is important to note that this is a small sample of the diverse projects the Department of Public Works and Transportation (DPWT) has underway at any given time, and, therefore, no firm or statistically accurate findings can be made from such a small population.

We acknowledge and appreciate that the authors have attempted to account for the market escalation of costs over time in an effort to explain the discrepancies in early project cost

Office of the Director

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estimates and the most recent cost estimates or final project costs, as appropriate. However, we do not agree with the use of the Engineering News Record construction index for Baltimore as being representative of the actual construction market escalation for road projects in Montgomery County, for two reasons:

1. Geographic Area – the Baltimore region has very different employment demographics, supply of contractors, and labor and material costs from the Washington, DC area. We a have much higher cost of living and the number of contractors and availability of labor is substantially different from that of Baltimore for the ENR index to be accurately used in this study; and

2. The ENR index is not really applicable to road or bridge construction. The index includes items such as Portland cement, lumber and drywall materials and includes wages for carpenters, bricklayers and iron workers. These types of material and labor costs are seldom, if at all, used on road construction. Furthermore, the ENR index specifically excludes asphalt, one of the major cost components of our roads. We will attempt to obtain a more relevant price index for road construction for our discussion with the Transportation and Environment (T&E) Committee.

We would have liked to see a comparison of DPWT's performance with the performance of other jurisdictions, including the SHA. We believe Montgomery County would have performed favorably in such a comparison.

Thank you for the opportunity to comment on this study. We look forward to discussing these topics and more with the T&E Committee.

AH/je

cc: Bruce Johnston, Chief, Division of Capital Development, DPWT
Edgar Gonzalez, Deputy Director for Transportation Policy, DPWT
Joseph Beach, Director, OMB

APPENDIX A:

First and Last PDFs for the 14 Projects Studied

Note: This appendix includes the first and last Council-approved PDF for each of the 14 projects studied in this report. For current projects that are scheduled for completion in FY09 and beyond, this appendix also includes the PDF from the Executive's Recommended FY09-14 CIP.

Recently Completed Road Projects:

Current County Road Projects:

Briggs Chaney Road East of US 29 -- No. 509942

Category	**Transportation**	Date Last Modified	**May 22, 1998**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Fairland-Beltsville**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY97	Estimate FY98	Total 6 Years	FY99	FY00	FY01	FY02	FY03	FY04	Beyond 6 Years
Planning, Design and Supervision	916	0	0	916	0	100	363	151	259	43	0
Land	165	0	0	165	0	0	0	165	0	0	0
Site Improvements and Utilities	1,924	0	0	1,020	0	0	0	50	515	455	904
Construction	3,603	0	0	3,603	0	0	0	636	2,543	424	0
Other											
Total	6,608	0	0	5,704	0	100	363	1,002	3,317	922	904

FUNDING SCHEDULE ($000)

G.O. Bonds	4,050	0	0	3,551	0	100	363	660	2,186	242	499
Impact Tax	2,003	0	0	1,598	0	0	0	342	1,131	125	405
Intergovernmental	555	0	0	555	0	0	0	0	0	555	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project will involve the reconstruction of Briggs Chaney Road from US 29 east to the limits of the existing Briggs Chaney Road - Curve Improvement (No. 509781) project at Gentry Ridge Court. The project is divided into two sections: 1) to reconstruct Briggs Chaney Road as a four-lane, divided, closed-section roadway from Automobile/Castle Boulevards to Aston Manor Drive, and 2) to improve Briggs Chaney Road from Aston Manor Drive to Gentry Ridge Court as a two-lane, undivided, open-section, arterial. Included in this project will be an improved and continuous sidewalk along the north side, a new Class I Bikeway on the south side from US 29 to Olive Branch Drive, and streetscaping between the project's western limits and Robey Road. Streetlights funded by this project will be provided within the limits of this project and for the Briggs Chaney Curve Improvement (No. 509781) project.

Service Area

Fairland/White Oak Policy Area

Capacity

Upon completion, roadway capacity will vary from 36,000 vehicles per day through the four-lane divided section to 15,000 vehicles per day through the two-lane section.

JUSTIFICATION

Briggs Chaney Road is designated in the Fairland Region Master Plan as A-86. This project will enhance east-west mobility between Montgomery and Prince George's Counties and improve local circulation for the Briggs Chaney Center commercial area (including businesses within the Montgomery Auto Sales Park). The project will also improve access to the Briggs Chaney Park & Ride lot, Greencastle Elementary School, and the programmed East County Recreation Center. Improved pedestrian and bicycle facilities will provide safer travel and recreational alternatives in the Fairland Region.

STATUS

Conceptual stage

OTHER

The scope and schedule of this project are new for FY99. Planning, and 35 percent design are funded from the Facility Planning-Transportation (No. 509337) project. The "Intergovernmental" revenue in the funding schedule represents a reimbursement from WSSC for its share of utility relocation costs.

FISCAL NOTE

Impact taxes are assessable on the cost of projects within the Eastern Montgomery County Impact Tax Area. Impact tax funding for this project is reduced in order to reflect lower projected revenues from impact taxes.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		6,608
First Cost Estimate Current Scope	FY99	6,608
Last FY's Cost Estimate		0
Present Cost Estimate		6,608
Appropriation Request	FY99	0
Appropriation Request	FY00	463
Supplemental Appropriation Request	FY98	0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Capitalization Thru	FY96	0
New Capitalization	FY97	0
Total Capitalization		0

COORDINATION

Bell Atlantic Company
Facility Planning-Transportation (No. 509337)
Historic Preservation Commission
ICC Feasibility Study (No. 508617)
MD - Department of the Environment
MD - Department of Natural Resources
M-NCPPC
MSHA
PEPCO
Department of Permitting Services
U.S. Army Corps of Engineers
WSSC

MAP

See Map on Next Page

Briggs Chaney Road East of US 29 -- No. 509942

Category	**Transportation**	*Date Last Modified*	**January 10, 2002**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**7-208 (02 App)**
Planning Area	**Fairland-Beltsville**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY01	Estimate FY02	Total 6 Years	FY03.	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	1,177	138	579	460	330	130	0	0	0	0	0
Land	499	9	310	180	100	80	0	0	0	0	0
Site Improvements and Utilities	1,841	0	206	1,635	135	1,500	0	0	0	0	0
Construction	3,283	0	323	2,960	1,510	1,450	0	0	0	0	0
Other											
Total	6,800	147	1,418	5,235	2,075	3,160	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	3,920	147	864	2,909	1,239	1,670	0	0	0	0	0
Impact Tax	2,515	0	554	1,961	836	1,125	0	0	0	0	0
Intergovernmental	365	0	0	365	0	365	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION
This project provides for reconstruction of Briggs Chaney Road from US 29, east to Dogwood Drive. The project is divided into two sections: 1) 2,500 linear feet of curbed, four-lane, divided roadway from Automobile/Castle Boulevard to Aston Manor Drive; and 2) 1,000 linear feet of curbed, two-lane undivided roadway from Aston Manor Drive to Dogwood Drive. Also included are: a five-foot wide concrete sidewalk along the north side; an eight-foot wide asphalt bikeway along the south side (extending east to Olive Branch Drive); and landscape/streetscape planting through the project limits. The Master Plan minimum right-of-way width is 120 feet. Streetlights funded by this project are to be installed within the limits of the adjacent Briggs Chaney Road - Curve Improvement project as well.

Service Area
Fairland/White Oak Policy Area

Capacity
Upon completion, roadway capacity will vary from 36,000 vehicles per day through the four-lane divided section, to 15,000 vehicles per day through the two-lane section.

JUSTIFICATION
Briggs Chaney Road is designated in the Fairland Region Master Plan as A-86. This project will enhance east-west mobility between Montgomery and Prince George's Counties and improve local circulation for the Briggs Chaney Center commercial area, including businesses within the Montgomery Auto Sales Park. The project will also improve access to the Briggs Chaney Park and Ride lot, Greencastle Elementary School, and the East County Recreation Center. Improved pedestrian and bicycle facilities will provide safer travel and recreational alternatives in the Fairland Region.

Plans and Studies
A project prospectus was prepared in March 1997, by DPWT, which documents the need for the project and conceptually describes the improvements needed.

Cost Change
Not applicable.

STATUS
Final design.

OTHER
The project scope has remained the same. Planning and preliminary design were funded from the Facility Planning-Transportation project. The "Intergovernmental" revenue in the funding schedule represents a reimbursement from WSSC for its share of utility relocation costs.

FISCAL NOTE
Starting in FY02, Impact tax for this project is assumed at 39.1 percent of the project cost in the Eastern Montgomery Impact Tax Area.

APPROPRIATION AND EXPENDITURE DATA

		($000)
Date First Appropriation	FY99	
Initial Cost Estimate		6,608
First Cost Estimate Current Scope	FY99	6,608
Last FY's Cost Estimate		6,800
Present Cost Estimate		6,800
Appropriation Request	FY03	0
Appropriation Request Est.	FY04	0
Supplemental Appropriation Request	FY02	0
Transfer		0
Cumulative Appropriation		6,800
Expenditures/ Encumbrances		294
Unencumbered Balance		6,506
Partial Closeout Thru	FY00	0
New Partial Closeout	FY01	0
Total Partial Closeout		0

COORDINATION

Maryland State Highway Administration
M-NCPPC
Maryland Department of the Environment
Department of Permitting Services
WSSC
Utility Companies
Facility Planning-Transportation
ICC Feasibility Study

MAP

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Germantown Road Extended -- No. 509954

Category	**Transportation**	Date Last Modified	**July 2, 1998**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Germantown**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY97	Estimate FY98	Total 6 Years	FY99	FY00	FY01	FY02	FY03	FY04	Beyond 6 Years
Planning, Design and Supervision	863	0	0	863	333	127	350	53	0	0	0
Land	150	0	0	150	0	150	0	0	0	0	0
Site Improvements and Utilities	1,100	0	0	1,100	0	390	0	710	0	0	0
Construction	2,515	0	0	2,515	0	0	1,621	894	0	0	0
Other											
Total	4,628	0	0	4,628	333	667	1,971	1,657	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	3,075	0	0	3,075	135	202	1,437	1,301	0	0	0
Development Approval Payment	624	0	0	624	124	350	150	0	0	0	0
Impact Tax	854	0	0	854	74	40	384	356	0	0	0
Intergovernmental	75	0	0	75	0	75	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

Germantown Road Extended Section I, which was recently completed, provided three lanes of the future six-lane highway from MD 355 to Scenery Drive. This project provides funding for Section II, the extension of Germantown Road from Scenery Drive to Watkins Mill Road. The project consists of construction of three lanes of a future six-lane divided major highway. The typical roadway section consists of pavement width of 38 feet with a 5-foot concrete sidewalk on the north side and an 8-foot bituminous bikepath on the south side. The bikepath will extend past the intersection of Watkins Mill Road approximately 1,500 feet to meet the existing bikepath at Green River Terrace. Improvements at the intersection with Blunt Road and sidewalks along the north and south portions of Blunt Road will also be included in this project. Landscaping from MD 355 to Watkins Mill Road is also included in this project.

Service Area

Germantown East Policy Area

Capacity

Peak hour capacity of Germantown Road Extended will increase from 2,300 to 5,500 vehicles. By the year 2010 the Average Daily Traffic (ADT) will be in excess of 33,000 vehicles per day.

STATUS

Preliminary design stage

OTHER

The scope and schedule are new for FY99. The preliminary design costs for this project were funded in the Facility Planning: Transportation (No. 509337) project. The current project cost is based on a preliminary cost estimate, once the project reaches the 70 percent engineering design stage, a refined cost estimate will be programmed. The "Intergovernmental" revenue in the funding schedule represents contributions from WSSC for work required to their facilities in association with this project.

FISCAL NOTE

Development Approval Payments (DAP) collected through FY97 have been programmed in this project. Impact taxes are assessable on the cost of projects within the Germantown Impact Tax Area. Impact tax funding for this project is reduced in order to reflect lower projected revenues from impact taxes.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		4,628
First Cost Estimate Current Scope	FY99	4,628
Last FY's Cost Estimate		0
Present Cost Estimate		4,628
Appropriation Request	FY99	1,000
Appropriation Request	FY00	3,628
Supplemental Appropriation Request	FY98	0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Capitalization Thru	FY96	0
New Capitalization	FY97	0
Total Capitalization		0

COORDINATION

Bell Atlantic Company
Department of Environmental Protection
Facility Planning: Transportation (No. 509337)
MD - Department of Natural Resources
M-NCPPC
MSHA
PEPCO
Department of Permitting Services
U.S. Army Corps Of Engineers
Washington Gas and Light
WSSC

MAP

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Germantown Road Extended – No. 509954

Category	Transportation	Date Last Modified	May 5, 2003
Agency	Public Works & Transportation	Previous PDF Page Number	11-80 (03 App)
Planning Area	Germantown	Required Adequate Public Facility	NO
Relocation Impact	None		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY02	Remain FY02	Total 6 Years	FY03	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	1,134	908	0	226	196	30	0	0	0	0	0
Land	176	156	20	0	0	0	0	0	0	0	0
Site Improvements and Utilities	782	2	0	780	580	200	0	0	0	0	0
Construction	4,209	2,895	0	1,314	1,214	100	0	0	0	0	0
Other	1	1	0	0	0	0	0	0	0	0	0
Total	6,302	3,962	20	2,320	1,990	330	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	3,794	3,038	0	756	756	0	0	0	0	0	0
Development Approval Payment	924	924	0	0	0	0	0	0	0	0	0
Impact Tax	1,474	0	20	1,454	1,124	330	0	0	0	0	0
Intergovernmental	110	0	0	110	110	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				28	0	0	7	7	7	7	0
Energy				40	0	0	10	10	10	10	0
Net Impact				68	0	0	17	17	17	17	0

DESCRIPTION

Germantown Road Extended Section I, which was recently constructed, provides three lanes of a future six-lane highway from MD 355 to Scenery Drive. This project provides funding for Section II, the extension of Germantown Road from Scenery Drive to Watkins Mill Road, a distance of approximately 3,000 feet. The project provides construction of three lanes of a future six-lane divided major highway. The typical roadway section consists of pavement width of 38 feet with a 5-foot concrete sidewalk on the north side and an 8-foot asphalt bikeway on the south side. The bikeway will extend past the intersection of Watkins Mill Road approximately 1,500 feet to meet the existing bikeway at Green River Terrace. Improvements at the intersection with Blunt Road include reconstruction of South Blunt Road to a tee intersection with Germantown Road Extended and construction of a roundabout at the intersection of Germantown Road Extended and North Blunt Road. This project also provides funding for construction of a second culvert on South Blunt Road to relieve a potential flood hazard at Cross Laurel Drive. Sidewalks along the north and south portions of Blunt Road, reforestation, streetlights, and landscaping from MD 355 to Watkins Mill Road are included in this project.

Service Area

Germantown East Policy Area.

Capacity

Peak hour capacity of Germantown Road Extended will increase from 2,300 to 5,500 vehicles. By the year 2010, the Average Daily Traffic (ADT) will be in excess of 33,000 vehicles per day.

JUSTIFICATION

This portion of Germantown Road is recommended in the Germantown and Vicinity Master Plan as a six-lane divided major highway within a 150 foot right-of-way. This interim project will improve capacity and traffic circulation in the Germantown East Policy Area. Lack of this link is causing cut-through traffic.

Cost Change

Not applicable.

STATUS

Open to traffic.

OTHER

The preliminary design costs for this project were funded in the Facility Planning - Transportation project. The "Intergovernmental" revenue in the funding schedule represents a contribution from WSSC for work required to their facilities in association with this project.

FISCAL NOTE

Starting in FY02, impact tax for this project is assumed at 26.7 percent of the project cost in the Germantown Impact Tax area.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		4,628
First Cost Estimate Current Scope	FY03	6,302
Last FY's Cost Estimate		6,302
Present Cost Estimate		6,302
Appropriation Request	FY04	50
Supplemental Appropriation Request	FY03	0
Transfer		0
Cumulative Appropriation		6,252
Expenditures/ Encumbrances		5,583
Unencumbered Balance		669
Partial Closeout Thru	FY01	0
New Partial Closeout	FY02	0
Total Partial Closeout		0

COORDINATION

M-NCPPC
WSSC
Utility Companies
Department of Permitting Services
Maryland Department of the Environment

MAP

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Muncaster Road Improvements -- No. 509943

Category	**Transportation**	*Date Last Modified*	**May 28, 1998**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Upper Rock Creek**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY97	Estimate FY98	Total 6 Years	FY99	FY00	FY01	FY02	FY03	FY04	Beyond 6 Years
Planning, Design and Supervision	376	0	0	376	115	54	10	150	47	0	0
Land	82	0	0	82	0	0	82	0	0	0	0
Site Improvements and Utilities	92	0	0	92	0	0	0	0	92	0	0
Construction	960	0	0	960	0	0	0	700	260	0	0
Other											
Total	1,510	0	0	1,510	115	54	92	850	399	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	1,500	0	0	1,500	115	54	92	850	389	0	0
Intergovernmental	10	0	0	10	0	0	0	0	10	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for localized spot improvements along Muncaster Road including horizontal and vertical re-alignment for approximately 3,300 linear feet from Hollingworth Drive to the entrance of the Agricultural History Farm Park. The pavement section will be increased from a 20-foot width to a 24-foot width with 8-foot sod shoulders on both sides. Streetlighting will be provided within the project limits.

Service Area

Redland and Vicinity (Rural Policy Area)

Capacity

Average Daily Traffic (ADT) has been projected to increase from the current 7,400 vehicles per day to 12,000 vehicles per day by design year 2010.

Plans and Studies

A 1994 study of the Upper Rock Creek Master Plan reviewed a comprehensive set of issues in regard to the proposed master plan. After public meetings, the scope of this project was reduced from the master plan scope to reduce impacts on adjacent property owners.

Specific Data

The original master plan scope consisted of a two-lane roadway following the existing alignment from MD 108 to the Agricultural History Farm Park and then turned westward to align opposite Shady Grove Road at Airpark Drive. The reduced scope focuses on the need to provide safety improvements at localized spots. The two locations which exhibited the highest accident rate are included in this project.

Cost Change

Not Applicable

STATUS

Preliminary Design Stage

OTHER

The scope and schedule of this project are new for FY99. Preliminary design costs were funded from the Facility Planning: Transportation (No. 509337) project. The current project cost is based on the preliminary stage of design. Once the final design stage is reached, a refined cost estimate will be provided which may vary from the current project cost. The "Intergovernmental" revenue shown in the funding schedule is from WSSC as its share of utility relocation costs.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		1,510
First Cost Estimate Current Scope	FY99	1,510
Last FY's Cost Estimate		0
Present Cost Estimate		1,510
Appropriation Request	FY99	179
Appropriation Request	FY00	0
Supplemental Appropriation Request	FY98	0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Capitalization Thru	FY96	0
New Capitalization	FY97	0
Total Capitalization		0

COORDINATION

Bell Atlantic Company
Department of Environmental Protection
Facility Planning: Transportation (No. 509337)
MD - Department of Natural Resources
M-NCPPC
MSHA
Department of Permitting Services
U.S. Army Corps of Engineers
Washington Gas and Light
WSSC

MAP

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Muncaster Road Improvements -- No. 509943

Category	**Transportation**	Date Last Modified	**January 6, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Upper Rock Creek**		
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	1,171	707	419	45	45	0	0	0	0	0	0
Land	354	191	163	0	0	0	0	0	0	0	0
Site Improvements and Utilities	711	1	577	133	133	0	0	0	0	0	0
Construction	1,462	0	1,371	91	91	0	0	0	0	0	0
Other	1	1	0	0	0	0	0	0	0	0	0
Total	3,699	900	2,530	269	269	0	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	2,970	894	2,076	0	0	0	0	0	0	0	0
Federal Aid	723	0	454	269	269	0	0	0	0	0	0
Intergovernmental	6	6	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Energy				20	0	4	4	4	4	4	0
Net Impact				20	0	4	4	4	4	4	0

DESCRIPTION

This project provides roadway improvements along Muncaster Road including horizontal and vertical realignment for approximately 3,300 linear feet from Hollingsworth Drive to the entrance of the Agricultural History Farm Park and replacement of the existing bridge superstructure over Rock Creek. The pavement section will be increased from a 20-foot width to a 24-foot width with 8-foot grass shoulders on both sides. Streetlighting will be provided within the project limits.

Service Area

Redland and vicinity (Rural Policy Area).

Capacity

Average Daily Traffic (ADT) has been projected to increase from the current 9,000 vehicles per day to 14,000 vehicles per day by design year 2020.

JUSTIFICATION

The original master plan scope consisted of a two-lane roadway following the existing alignment from MD 108 to the Agricultural History Farm Park and then turned westward to align opposite Shady Grove Road at Airpark Drive. The reduced scope focuses on the need to provide safety improvements at localized spots. The two locations which exhibited the highest accident rate are included in this project.

Plans and Studies

A 1994 study of the Upper Rock Creek Master Plan reviewed a comprehensive set of issues in regard to the proposed master plan. After public meetings, the scope of this project was reduced from the master plan scope to reduce impacts on adjacent property owners. Pedestrian safety was considered during design.

Cost Change

Not applicable.

STATUS

Bids let.

OTHER

The construction cost for the replacement of the bridge superstructure and 600 feet of the approach road are eligible for 80 percent Federal funding. The bridge over Rock Creek will be closed for a maxium of four months. Preliminary design costs were funded from the Facility Planning - Transportation project.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		1,510
First Cost Estimate Current Scope	FY05	3,449
Last FY's Cost Estimate		3,449
Present Cost Estimate		3,699
Appropriation Request	FY07	0
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		0
Cumulative Appropriation		3,699
Expenditures/ Encumbrances		3,378
Unencumbered Balance		321
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Department of Environmental Protection
Facility Planning: Transportation
Maryland Department of Natural Resources
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration
Department of Permitting Services
U.S. Army Corps of Engineers
Washington Gas Light Company
Washington Suburban Sanitary Commission
Verizon
PEPCO

MAP

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Shady Grove Road - Six Lanes -- No. 509967

Category	**Transportation**	Date Last Modified	**January 10, 1998**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Gaithersburg Vicinity**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY97	Estimate FY98	Total 6 Years	FY99	FY00	FY01	FY02	FY03	FY04	Beyond 6 Years
Planning, Design and Supervision	708	0	0	708	100	90	90	0	355	73	0
Land	200	0	0	200	0	0	0	200	0	0	0
Site Improvements and Utilities	150	0	0	150	0	0	0	0	0	150	0
Construction	3,192	0	0	3,192	0	0	0	0	2,000	1,192	0
Other											
Total	4,250	0	0	4,250	100	90	90	200	2,355	1,415	0

FUNDING SCHEDULE ($000)

G.O. Bonds	4,250	0	0	4,250	100	90	90	200	2,355	1,415	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for the widening of segments of Shady Grove Road to complete the six-lane section between Briardale Road and Muncaster Mill Road (MD 115). The widening will be from Midcounty Highway to approximately 700 feet south of Muncaster Mill Road (MD 115) on the southbound side. On the northbound side, the project limits are from Mill Run Drive 700 feet south to Muncaster Mill Road (MD 115), and from Tupelo Drive to Midcounty Highway.

Service Area

Derwood/Shady Grove Policy Areas

Capacity

The roadway will have a capacity of 55,000 vehicles per day upon completion.

Plans and Studies

The *Gaithersburg Vicinity Master Plan* designates this roadway as major highway M-42. Rush hour traffic is severely congested on the segments of the road that have not been completed to the master planned pavement width.

Specific Data

Traffic is expected to increase with development planned for the area.

Cost Change

Not applicable

STATUS

Conceptual Stage

OTHER

The project scope and schedule is new for FY99. Preliminary design costs will be funded directly from the Facility Planning: Transportation (No. 509337) project.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		4,250
First Cost Estimate Current Scope	FY99	4,250
Last FY's Cost Estimate		0
Present Cost Estimate		4,250
Appropriation Request	FY99	280
Appropriation Request	FY00	0
Supplemental Appropriation Request	FY98	0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Capitalization Thru	FY96	0
New Capitalization	FY97	0
Total Capitalization		0

COORDINATION

MAP

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Shady Grove Road - Six Lanes -- No. 509967

Category	**Transportation**	Date Last Modified	**March 19, 2002**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**11-40 (01 App)**
Planning Area	**Gaithersburg Vicinity**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY01	Estimate FY02	Total 6 Years	FY03	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	777	228	259	290	260	30	0	0	0	0	0
Land	55	2	53	0	0	0	0	0	0	0	0
Site Improvements and Utilities	1,293	113	506	674	674	0	0	0	0	0	0
Construction	2,697	4	672	2,021	1,751	270	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	4,822	347	1,490	2,985	2,685	300	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	4,822	347	1,490	2,985	2,685	300	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				65	0	13	13	13	13	13	0
Energy				55	0	11	11	11	11	11	0
Net Impact				120	0	24	24	24	24	24	0

DESCRIPTION

This project provides for the widening of segments of Shady Grove Road to provide six-lane continuous through travel between the Shady Grove Road Bridge over I-370 and Muncaster Mill Road (MD 115). The one-lane widening will be from the Shady Grove Road Bridge over I-370 to approximately 700 feet south of Muncaster Mill Road (MD 115) on the northbound side, and one lane from approximately 700 feet south of Muncaster Mill Road (MD 115) to Midcounty Highway, on the southbound side. Pavement will be replaced in the existing lanes adjacent to the widening as needed based on analysis of the structural integrity of the pavement. The project provides for a five-foot-wide sidewalk on the northbound side from Briardale Road to Muncaster Mill Road and from Crabbs Branch Way to Briardale Road with streelights on the sidewalk side from Crabbs Branch Way to Muncaster Mill Road. Class II bike lanes will be provided on both sides of Shady Grove Road between Crabbs Branch Way and Muncaster Mill Road.

Service Area

Derwood/Shady Grove Policy Areas

Capacity

The roadway will have a capacity of 55,000 vehicles per day upon completion.

Plans and Studies

The Gaithersburg Vicinity Master Plan designates this roadway as major highway M-42. Rush hour traffic is severely congested on the segments of the road that have not been completed to the master-planned pavement width. Noise abatement measures are not included in this project. They will be measured and prioritized according to the newly-adopted Noise Abatement Policy under the new Highway Noise Abatement project.

Cost Change

The cost increase is due to the addition of pavement milling and additional pavement overlay for the existing lanes.

STATUS

Detailed design complete.

OTHER

The project scope has increased to include the addition of roadway widening between the Shady Grove Road Bridge over I-370 and Briardale Road and the addition of pavement marking for an on-road (Class II) bike lane. The funding and expenditure schedule is adjusted to conform with current project implementation expectations.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		4,250
First Cost Estimate Current Scope	FY03	4,822
Last FY's Cost Estimate		4,550
Present Cost Estimate		4,822
Appropriation Request	FY03	272
Appropriation Request Est.	FY04	0
Supplemental Appropriation Request	FY02	0
Transfer		0
Cumulative Appropriation		4,550
Expenditures/ Encumbrances		499
Unencumbered Balance		4,051
Partial Closeout Thru	FY00	0
New Partial Closeout	FY01	0
Total Partial Closeout		0

COORDINATION

Facility Planning - Transportation
M-NCPPC
PEPCO
Department of Permitting Services
WSSC
Washington Gas & Light Company
Maryland State Highway Administration

MAP

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Valley Park Drive -- No. 509944

Category	**Transportation**	Date Last Modified	**May 28, 1998**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Damascus**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY97	Estimate FY98	Total 6 Years	FY99	FY00	FY01	FY02	FY03	FY04	Beyond 6 Years
Planning, Design and Supervision	370	0	0	370	90	115	18	65	82	0	0
Land	190	0	0	190	0	0	190	0	0	0	0
Site Improvements and Utilities	235	0	0	235	0	0	0	0	235	0	0
Construction	950	0	0	950	0	0	0	475	475	0	0
Other											
Total	1,745	0	0	1,745	90	115	208	540	792	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	1,667	0	0	1,667	90	115	208	540	714	0	0
Intergovernmental	78	0	0	78	0	0	0	0	78	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for the extension of Valley Park Drive from its existing terminus west of Shelldrake Circle westward to Ridge Road (MD 27), a distance of 1,920 feet. This project also includes acceleration and deceleration lanes on MD 27, as well as a five-foot wide sidewalk on the north side of the road from Valley Park Terrace to MD 27. It consists of 590 feet of 50-foot wide pavement (4 lanes) for the westernmost portion and 1,330 feet of 26-foot wide pavement (two lanes) to tie-in to existing Valley Park Drive.

Service Area

Damascus and Vicinity

Capacity

This section of roadway will have a capacity of 3,000 vehicles per day upon project completion.

Plans and Studies

This road is classified as arterial road A-25, in the Damascus Master Plan which recommends this arterial (A-25) to serve existing and future development. The Montgomery County Department of Public Works and Transportation (DPW&T) will design the road, and developer contributions will fund the first 790-foot section east of MD 27 as a result of their purchase of the HOC Property at this intersection. The funding schedule will be revised upon completion of a participation agreement with the developer.

Specific Data

The Average Weekday Traffic (AWT) on existing Valley Park Drive is 2,000 vehicles per day. Projected AWT upon project completion will be 3,000 vehicles per day. Future AWTs are projected to be 4,000 vehicles per day in 2005 and 6,000 vehicles per day in 2015. This project will also provide a safer access for the residents of Damascus Manor Townhomes, by connecting Running Valley Lane to Valley Park Drive and eliminating the intersection of Running Valley Lane with MD 27.

Cost Change

Not Applicable

STATUS

Preliminary design stage

OTHER

The scope and schedule for this project are new for FY99. The preliminary design costs were funded from the Facility Planning: Transportation (No. 509337) project. The "Intergovernmental" revenue shown in the funding schedule is from WSSC as its share of utility relocation costs.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		1,745
First Cost Estimate Current Scope	FY99	1,745
Last FY's Cost Estimate		0
Present Cost Estimate		1,745
Appropriation Request	FY99	223
Appropriation Request	FY00	0
Supplemental Appropriation Request	FY98	0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Capitalization Thru	FY96	0
New Capitalization	FY97	0
Total Capitalization		0

COORDINATION

Bell Atlantic Company
Facility Planning: Transportation (No. 509337)
FHWA
MD - Department of the Environment
MD - Department of Natural Resources
M-NCPPC
MSHA
PEPCO
Department of Permitting Services
Soil Conservation Service
U.S. Army Corps of Engineers
Washington Gas and Light
WSSC

MAP

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Valley Park Drive -- No. 509944

Category	**Transportation**	Date Last Modified	**January 6, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**YES**
Planning Area	**Damascus**		
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	716	438	105	173	173	0	0	0	0	0	0
Land	118	4	114	0	0	0	0	0	0	0	0
Site Improvements and Utilities	107	3	104	0	0	0	0	0	0	0	0
Construction	2,074	0	2,036	38	38	0	0	0	0	0	0
Other	50	0	50	0	0	0	0	0	0	0	0
Total	3,065	445	2,409	211	211	0	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	2,716	385	2,331	0	0	0	0	0	0	0	0
Contributions	78	0	78	0	0	0	0	0	0	0	0
Impact Tax	211	0	0	211	211	0	0	0	0	0	0
Intergovernmental	60	60	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				20	0	4	4	4	4	4	0
Energy				5	0	1	1	1	1	1	0
Net Impact				25	0	5	5	5	5	5	0

DESCRIPTION

This project is to provide an extension of Valley Park Drive from its existing terminus west of Shelldrake Circle westward to the new Magruder Park Subdivision, a distance of 1,130 feet. The proposed roadway consists of 26-foot wide pavement (two lanes) from the existing terminus, westward 1,031 feet, where it begins widening to a 38 foot cross section. The project also includes a five-foot wide sidewalk on the north side of the road from Valley Park Terrace to the Magruder Park Subdivision and on the south side from Valley Park Court to Magruder Branch Park Trail.

Service Area

Damascus vicinity.

JUSTIFICATION

The Average Weekday Traffic (AWT) on existing Valley Park Drive is 2,000 vehicles per day. Projected AWT upon completion will be 3,000 vehicles per day. Future AWTs are projected to be 4,000 vehicles per day in 2005 and 6,000 vehicles per day in 2015. This project will provide safer access for the residents of Damascus Manor Townhomes by connecting Running Valley Lane to Valley Park Drive and eliminating the intersection of Running Valley Lane with Ridge Road (MD 27). This arterial road is being built in lieu of previously funded improvements to Sweepstakes Road, a primary street.

Plans and Studies

This road is classified as arterial road A-25 in the Damascus Master Plan which recommends this arterial to serve existing and future development. A pedestrian impact analysis has been completed for this project.

Cost Change

Transferred $17k to Advanced Reforestation.

STATUS

Bids let.

OTHER

Initially, Housing Opportunities Commission (HOC) was required to fund the design and construction of the roadway (790 feet) east of MD 27 and acceleration and deceleration lanes at MD 27 as part of their development plans. Since that time, HOC has sold their parcel to Elm Street Development and Elm Street is currently developing the property based on the original plan.

FISCAL NOTE

The "Intergovernmental" revenue shown in the funding schedule is from Washington Suburban Sanitary Commission (WSSC) as its share of utility relocation costs. Preliminary design was funded in the Facility Planning: Transportation project. The Department of Public Works and Transportation (DPWT) has executed a Memorandum of Understanding with the developer of the Magruder Park Subdivision which obligates DPWT to compensate the developer $50,000 for construction of a stormwater management pond. Elm Street development has agreed to convey right-of-way to the County for construction of Valley Park Drive at zero cost and to contribute $78,750.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY99	($000)
Initial Cost Estimate		1,745
First Cost Estimate Current Scope	FY04	3,082
Last FY's Cost Estimate		3,082
Present Cost Estimate		3,065
Appropriation Request	FY07	0
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		-17
Cumulative Appropriation		3,082
Expenditures/ Encumbrances		2,831
Unencumbered Balance		251
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Maryland Department of the Environment
Maryland Department of Natural Resources
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration
Allegheny Power
Department of Permitting Services
Soil Conservation Service
Washington Gas Light Company
Verizon
Washington Suburban Sanitary Commission50015
Elm Street Development
Facility Planning: Transportation

MAP

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Burtonsville Access Road – No. 500500

Category	**Transportation**	Date Last Modified	**May 12, 2004**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Fairland-Beltsville**	Required Adequate Public Facility	**NO**
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY03	Est. FY04	Total 6 Years	FY05	FY06	FY07	FY08	FY09	FY10	Beyond 6 Years
Planning, Design and Supervision	839	0	0	839	510	35	198	96	0	0	0
Land	648	0	0	648	0	648	0	0	0	0	0
Site Improvements and Utilities	958	0	0	958	0	0	100	858	0	0	0
Construction	1,300	0	0	1,300	0	0	1,100	200	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	3,745	0	0	3,745	510	683	1,398	1,154	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	3,745	0	0	3,745	510	683	1,398	1,154	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides a new roadway between Spencerville Road (MD 198) and the School Access Road in Burtonsville. This roadway will consist of two 12-foot lanes, closed section, for a length of approximately 1,400 linear feet. The project also includes an eight-foot parking lane, curb and gutter, five-foot sidewalks, landscaping, and streetlighting.

Service Area

Burtonsville-Fairland area.

Capacity

The roadway and intersection capacities for year 2025 ADT for MD 198 are projected to be 40,700 vehicles per day.

JUSTIFICATION

This project implements the recommendations of the Fairland Master Plan. The proposed modifications to MD 198 (US 29 to Old Columbia Pike), which the SHA will undertake to correct the high incidence of accidents and improve capacity of the road, will eliminate access off MD 198 to the businesses along the north side of MD 198. The proposed roadway will provide rear access to businesses and will create a more unified and pedestrian-friendly downtown Burtonsville.

Plans and Studies

Project has been developed based on a planning study for Burtonsville Access Road, and as called for by the Fairland Master Plan. DPWT has completed Phase I Facility Planning Study and the Phase II preliminary engineering is being completed under Facility Planning.

A review of impacts to pedestrians, bicycles and ADA (Americans with Disabilities Act of 1991) is being performed and addressed by this project. Traffic signals, *streetlights, crosswalks, bus stops,* ADA ramps, bikeways, and other pertinent issues are being considered in the design of the project to ensure pedestrian safety. This project is a part of the Executive's Go Montgomery! program.

Cost Change

Not applicable.

STATUS

Preliminary design stage.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY05	($000)
Initial Cost Estimate		3,745
First Cost Estimate Current Scope	FY05	3,745
Last FY's Cost Estimate		0
Present Cost Estimate		3,745
Appropriation Request	FY05	510
Appropriation Request Est.	FY06	683
Supplemental Appropriation Request	FY04	0
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY02	0
New Partial Closeout	FY03	0
Total Partial Closeout		0

COORDINATION

Maryland-National Capital Park and Planning Commission
Utilities
Maryland State Highway Administration (MSHA)
Department of Permitting Services
Montgomery County Public Schools
Facility Planning: Transportation

MAP

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Burtonsville Access Road -- No. 500500

Category	**Transportation**	Date Last Modified	**March 19, 2007**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Fairland-Beltsville**		
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY06	Rem. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	1,137	281	0	856	0	93	59	704	0	0	0
Land	2,315	0	578	1,737	0	1,498	239	0	0	0	0
Site Improvements and Utilities	273	1	0	272	0	0	191	81	0	0	0
Construction	2,527	0	0	2,527	0	0	1,312	1,215	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	6,252	282	578	5,392	0	1,591	1,801	2,000	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	6,204	282	578	5,344	0	1,591	1,753	2,000	0	0	0
Intergovernmental	48	0	0	48	0	0	48	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				12	0	0	0	4	4	4	0
Energy				12	0	0	0	4	4	4	0
Net Impact				24	0	0	0	8	8	8	0

DESCRIPTION

This project provides a new roadway between *Spencerville Road (MD 198) and the School* Access Road in Burtonsville. This roadway will consist of two 12-foot lanes, closed section, for a length of approximately 1,400 linear feet. The project also includes an eight-foot parking lane, curb and gutter, five-foot sidewalks, landscaping, and streetlighting.

Service Area

Burtonsville-Fairland area.

Capacity

The roadway and intersection capacities for year 2025 Average Daily Traffic (ADT) for MD 198 are projected to be 40,700 vehicles per day.

JUSTIFICATION

This project implements the recommendations of the Fairland Master Plan. The proposed modifications to MD 198 (US 29 to Old Columbia Pike), which the Maryland State Highway Administration (SHA) *will undertake to correct the high incidence of accidents* and improve capacity of the road, will eliminate access off MD 198 to the businesses along the north side of MD 198. The proposed roadway will provide rear access to businesses and will create a more unified and pedestrian-friendly downtown Burtonsville.

Plans and Studies

Project has been developed based on a planning study for Burtonsville Access Road, and as called for by the Fairland Master Plan. The Department of Public Works and Transportation (DPWT) has completed Phase I Facility Planning Study and the Phase II preliminary engineering is being completed under Facility Planning. A pedestrian impact analysis has been completed for this project.

Cost Change

Adjust expenditure and funding schedule for fiscal capacity.

STATUS

Final design stage.

FISCAL NOTE

Intergovernmental funding includes WSSC contribution to water and sanitary sewer relocations.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY05	($000)
Initial Cost Estimate		3,745
First Cost Estimate Current Scope	FY07	6,252
Last FY's Cost Estimate		6,252
Present Cost Estimate		6,252
Appropriation Request	FY08	2,903
Supplemental Appropriation Request	FY07	0
Transfer		0
Cumulative Appropriation		3,349
Expenditures/ Encumbrances		340
Unencumbered Balance		3,009
Partial Closeout Thru	FY05	0
New Partial Closeout	FY06	0
Total Partial Closeout		0

COORDINATION

Maryland-National Capital Park and Planning *Commission*
Maryland State Highway Administration (MSHA)
Montgomery County Public Schools
Facility Planning: Transportation
Department of Public Libraries
Department of Public Works and Transportation
Department Technology Services
Department of Permitting Services
Washington Suburban Sanitary Commission
Washington Gas
Pepco
Verizon

MAP

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Burtonsville Access Road -- No. 500500

Category	Transportation	Date Last Modified	January 11, 2008
Subcategory	Roads	Required Adequate Public Facility	No
Administering Agency	Public Works & Transportation	Relocation Impact	None.
Planning Area	Fairland-Beltsville	Status	Final Design Stage

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY07	Est. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	1,044	350	151	543	100	100	343	0	0	0	0
Land	3,200	21	3,179	0	0	0	0	0	0	0	0
Site Improvements and Utilities	12	12	0	0	0	0	0	0	0	0	0
Construction	3,693	0	0	3,693	0	0	3,693	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	**7,949**	**383**	**3,330**	**4,236**	**100**	**100**	**4,036**	**0**	**0**	**0**	**0**

FUNDING SCHEDULE ($000)

G.O. Bonds	7,895	383	3,330	4,182	46	100	4,036	0	0	0	0
Intergovernmental	54	0	0	54	54	0	0	0	0	0	0
Total	**7,949**	**383**	**3,330**	**4,236**	**100**	**100**	**4,036**	**0**	**0**	**0**	**0**

OPERATING BUDGET IMPACT ($000)

Maintenance				12	0	0	0	4	4	4
Energy				12	0	0	0	4	4	4
Net Impact				**24**	**0**	**0**	**0**	**8**	**8**	**8**

DESCRIPTION
This project provides a new roadway between Spencerville Road (MD 198) and the School Access Road in Burtonsville. This roadway will consist of two 12-foot lanes, closed section, for a length of approximately 1,400 linear feet. The project also includes an eight-foot parking lane, curb and gutter, five-foot sidewalks, landscaping, and streetlighting.

CAPACITY
The roadway and intersection capacities for year 2025 Average Daily Traffic (ADT) for MD 198 is projected to be 40,700 vehicles per day.

COST CHANGE
Increase due to project reaching detailed design, increased land values, and increased construction and streetlighting costs.

JUSTIFICATION
This project implements the recommendations of the Fairland Master Plan. The proposed modifications to MD 198 (US 29 to Old Columbia Pike), which the Maryland State Highway Administration (SHA) will undertake to correct the high incidence of accidents and improve capacity of the road, will eliminate access off MD 198 to the businesses along the north side of MD 198. The proposed roadway will provide rear access to businesses and will create a more unified and pedestrian-friendly downtown Burtonsville.

Project has been developed based on a planning study for Burtonsville Access Road, and as called for by the Fairland Master Plan. The Department of Public Works and Transportation (DPWT) has completed Phase I Facility Planning Study and the Phase II preliminary engineering is being completed under Facility Planning.

FISCAL NOTE
Intergovernmental funding includes WSSC contribution to water and sanitary sewer relocations.

OTHER DISCLOSURES
- A pedestrian impact analysis has been completed for this project.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY05	($000)
First Cost Estimate Current Scope	FY07	6,252
Last FY's Cost Estimate		6,252
Appropriation Request	FY09	0
Appropriation Request Est.	FY10	1,697
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		6,252
Expenditures / Encumbrances		415
Unencumbered Balance		5,837
Partial Closeout Thru	FY06	0
New Partial Closeout	FY07	0
Total Partial Closeout		0

COORDINATION
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration (MSHA)
Montgomery County Public Schools
Facility Planning: Transportation
Department of Public Libraries
Department of Public Works and Transportation
Department Technology Services
Department of Permitting Services
Washington Suburban Sanitary Commission
Washington Gas
Pepco
Verizon

MAP
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Citadel Avenue Extended -- No. 500310

Category	**Transportation**	Date Last Modified	**May 20, 2002**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Rockville**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY01	Estimate FY02	Total 6 Years	FY03	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	397	0	0	397	0	0	206	42	149	0	0
Land	1,000	0	0	1,000	0	0	10	990	0	0	0
Site Improvements and Utilities	441	0	0	441	0	0	286	89	66	0	0
Construction	1,212	0	0	1,212	0	0	0	153	1,059	0	0
Other											
Total	3,050	0	0	3,050	0	0	502	1,274	1,274	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	3,050	0	0	3,050	0	0	502	1,274	1,274	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for the final design, right-of-way acquisition, and construction of the extension of Citadel Avenue from the dead end of the existing road south of Marinelli Road to Nicholson Lane, a distance of approximately 650 feet. The road will align with Huff Court and eventually be a section of Chapman Avenue, according to the master plan. This road will be a two-lane business street consisting of a 40-foot wide roadway within a 70-foot right-of-way. The design will include a sidewalk on the west side of the street, streetlighting, parking on both sides of the road, three retaining walls, and trees between the curb and sidewalk. Consistent with the WSSC and County master agreement, half the cost of the relocation of the WSSC water line will be borne by the County.

Service Area

North Bethesda - Garrett Park

Capacity

Upon completion, the road will have a capacity of 15,000 vehicles per day.

JUSTIFICATION

This project will provide a framework for local-circulation vehicle trips including shuttles, and will not compete with Nebel Street for north-south internal trips. This segment will provide a direct link between the WMATA Metro Station at White Flint, the White Flint North Development, and White Flint Mall. The project will also provide another link in the proposed master-planned local circulation network.

Plans and Studies

DPWT prepared a study titled "Chapman Avenue Final Report" in December 1996. This study recommended that Chapman Avenue (of which Citadel Avenue is a segment) be extended south from Bou Avenue to connect to the proposed extension of Executive Boulevard. This recommendation is consistent with the approved North Bethesda-Garrett Park Master Plan.

Cost Change

Not applicable.

STATUS

Preliminary design.

OTHER

The project scope and schedule are new for FY03.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY03	($000)
Initial Cost Estimate		3,050
First Cost Estimate Current Scope	FY03	3,050
Last FY's Cost Estimate		0
Present Cost Estimate		3,050
Appropriation Request	FY03	0
Appropriation Request Est.	FY04	0
Supplemental Appropriation Request	FY02	0
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY00	0
New Partial Closeout	FY01	0
Total Partial Closeout		0

COORDINATION

M-NCPPC
WSSC
PEPCO
Department of Permitting Services
Annual Sidewalk Program

MAP

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Citadel Avenue Extended -- No. 500310

Category	**Transportation**	Date Last Modified	**January 6, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Rockville**		
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	555	260	18	277	35	242	0	0	0	0	0
Land	2,456	31	2,425	0	0	0	0	0	0	0	0
Site Improvements and Utilities	183	1	0	182	57	125	0	0	0	0	0
Construction	2,213	0	568	1,645	0	1,645	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	5,407	292	3,011	2,104	92	2,012	0	0	0	0	0

FUNDING SCHEDULE ($000)

EDAET	97	97	0	0	0	0	0	0	0	0	0
G.O. Bonds	5,039	195	2,810	2,034	92	1,942	0	0	0	0	0
Development Approval Payment	99	0	99	0	0	0	0	0	0	0	0
Intergovernmental	172	0	102	70	0	70	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				16	0	0	4	4	4	4	0
Energy				4	0	0	1	1	1	1	0
Net Impact				20	0	0	5	5	5	5	0

DESCRIPTION

This project provides an extension of Citadel Avenue from its current terminus south of Marinelli Road, to Nicholson Lane, a distance of approximately 650 feet. The road will align with Huff Court and eventually become a section of Chapman Avenue in accordance with the master plan. This road will be a two-lane business street consisting of a 40-foot wide roadway within a 70-foot right-of-way. The design will include a sidewalk on the west side of the roadway, streetlighting, parking on both sides, three retaining walls, and street trees between the curb and sidewalk.

Service Area

North Bethesda - Garrett Park

Capacity

Upon completion, the road will have a capacity of 15,000 vehicles per day.

JUSTIFICATION

This project will provide a framework for local-circulation vehicle trips including shuttles, and will not compete with Nebel Street for north-south internal trips. This segment will provide a direct link between the Washington Metropolitan Area Transit Authority (WMATA) Metro Station at White Flint, the White Flint North Development, and White Flint Mall. The project will also provide another link in the proposed master-planned local circulation network.

Plans and Studies

The Department of Public Works and Transportation (DPWT) prepared a study titled "Chapman Avenue Final Report" in December 1996. This study recommended that Chapman Avenue (of which Citadel Avenue is a segment) be extended south from Bou Avenue to connect to the proposed extension of Executive Boulevard. This recommendation is consistent with the approved North Bethesda-Garrett Park Master Plan. A pedestrian impact analysis has been completed for this project.

Cost Change

Cost change is due to escalated land acquisition costs ($1.4m) and increased construction cost.

STATUS

Final design stage.

OTHER

The project scope remains the same. The Intergovernmental funding represents WSSC's share of the cost of relocating the 66-inch water main by the County as part of the construction contract.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY03	($000)
Initial Cost Estimate		3,050
First Cost Estimate Current Scope	FY05	3,855
Last FY's Cost Estimate		3,855
Present Cost Estimate		5,407
Appropriation Request	FY07	1,552
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		0
Cumulative Appropriation		3,855
Expenditures/ Encumbrances		299
Unencumbered Balance		3,556
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Maryland-National Capital Park and Planning Commission
Washington Suburban Sanitary Commission
PEPCO
Department of Permitting Services
Annual Sidewalk Program

MAP

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Fairland Road Improvement -- No. 500402

Category	Transportation	Date Last Modified	December 13, 2002
Agency	Public Works & Transportation	Previous PDF Page Number	NONE
Planning Area	Fairland-Beltsville	Required Adequate Public Facility	NO
Relocation Impact	None.		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY02	Remain FY02	Total 6 Years	FY03	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	1,447	0	0	1,447	200	445	25	317	250	210	0
Land	1,465	0	0	1,465	0	233	1,232	0	0	0	0
Site Improvements and Utilities	3,046	0	0	3,046	0	0	0	1,320	200	1,526	0
Construction	4,578	0	0	4,578	0	0	0	800	2,778	1,000	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	10,536	0	0	10,536	200	678	1,257	2,437	3,228	2,736	0

FUNDING SCHEDULE ($000)

G.O. Bonds	10,536	0	0	10,536	200	678	1,257	2,437	3,228	2,736	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for the design and construction of roadway improvements on Fairland Road from US 29 to the Prince Georges County line. The roadway will be widened from a two-lane, open section road to a three-lane, closed-section roadway (two 15-foot lanes and an 11-foot center turn lane) for the entire project length, approximately 7,130 feet. The project also entails installation of curb & gutter, storm drain system, a 5-foot sidewalk on the north side of the road, an 8-foot hiker/biker path on the south side of the road, and intersection improvements along the project corridor, as well as provision of landscaping and street lighting. The storm drain system design is based on the ten-year storm frequency.

Service Area

Fairland

Capacity

The Average Daily Traffic (ADT) on Fairland Road for the year 2020 is forecasted to be 18,500.

JUSTIFICATION

The project is needed to improve safety, accommodate high traffic volumes, improve roadway geometry, improve the poor drainage, and provide a safe path for pedestrians and hiker/bikers. The improvements will eliminate substandard features at several high-accident locations.

Plans and Studies

Project has been developed based on a planning study for Fairland Road, and as prescribed by the Fairland Master Plan. DPWT has completed phase I Facility Planning Study, and the Phase II preliminary engineering is currently underway in Facility Planning: Transportation.

Cost Change

Not applicable.

STATUS

Preliminary design.

OTHER

The supplemental appropriation provided in support of Go Montgomeryl will ensure that the project moves forward to final design following the completion of preliminary engineering design scheduled for December 2002.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		10,536
First Cost Estimate Current Scope	FY03	10,536
Last FY's Cost Estimate		0
Present Cost Estimate		10,536
Appropriation Request	FY04	1,465
Supplemental Appropriation Request	FY03	645
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY01	0
New Partial Closeout	FY02	0
Total Partial Closeout		0

COORDINATION

M-NCPPC
State Highway Administration
Utility Companies
Prince Georges County (DPW)
Department of Permitting Services

MAP

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Fairland Road Improvement -- No. 500402

Category	**Transportation**	Date Last Modified	**May 18, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Fairland-Beltsville**		
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	1,292	641	28	623	247	376	0	0	0	0	0
Land	1,741	382	1,359	0	0	0	0	0	0	0	0
Site Improvements and Utilities	1,643	76	92	1,475	68	1,407	0	0	0	0	0
Construction	6,269	0	360	5,909	1,946	3,963	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	10,945	1,099	1,839	8,007	2,261	5,746	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	9,316	1,099	1,839	6,378	632	5,746	0	0	0	0	0
Intergovernmental	129	0	0	129	129	0	0	0	0	0	0
State Aid	1,500	0	0	1,500	1,500	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				20	0	0	5	5	5	5	0
Energy				20	0	0	5	5	5	5	0
Net Impact				40	0	0	10	10	10	10	0

DESCRIPTION

This project provides for the design and construction of roadway improvements on Fairland Road from US 29 to the Prince Georges County line. The roadway will be widened from a two-lane, open section road to a three-lane, closed-section roadway (two 15-foot lanes and an 11-foot center turn lane) for the entire project length, approximately 7,130 feet. The project also entails installation of curb and gutter, storm drain system, a 5-foot sidewalk on the north side of the road, an 8-foot hiker/biker path on the south side of the road, and intersection improvements along the project corridor, as well as provision of landscaping and streetlighting. The storm drain system design is based on the ten-year storm frequency.

Service Area

Fairland.

Capacity

The Average Daily Traffic (ADT) on Fairland Road for the year 2020 is forecast to be 18,500.

JUSTIFICATION

The project is needed to improve safety, accommodate high traffic volumes, improve roadway geometry, improve poor drainage, and provide a safe path for pedestrians and hiker/bikers. The improvements will eliminate substandard features at several high-accident locations.

Plans and Studies

Project has been developed based on a planning study for Fairland Road, and as prescribed by the Fairland Master Plan. A pedestrian impact analysis has been completed for this project.

Cost Change

Cost increase due to inflation.

Total cost of this project has been decreased by $18k which is now programmed in the Advanced Reforestation project.

STATUS

Final design stage.

OTHER

The Maryland State Highway Administration (SHA) asked the County to revise the design plans for Fairland Road to incorporate a higher elevation and to construct a roundabout at Brahms Avenue as a two-lane roundabout, instead of the single-lane as originally scoped. SHA has agreed to reimburse the County for costs associated with this scope change which is estimated to be $1.5 million. Added $129k Intergovernmental is for utility relocation (WSSC).

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY04	($000)
Initial Cost Estimate		10,536
First Cost Estimate Current Scope	FY04	10,536
Last FY's Cost Estimate		10,536
Present Cost Estimate		10,945
Appropriation Request	FY07	409
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		0
Cumulative Appropriation		10,536
Expenditures/ Encumbrances		1,334
Unencumbered Balance		9,202
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration
Utility Companies
Prince George's County, Department of Public Works
Department of Permitting Services
Facility Planning: Transportation

The Executive asserts that this project conforms to the requirements of relevant local plans, as required by the Maryland Economic Growth, Resource Protection and Planning Act.

MAP

See Map on Next Page

Greencastle Road -- No. 500100

Category	Transportation	Date Last Modified	May 19, 2000
Agency	Public Works & Transportation	Previous PDF Page Number	NONE
Planning Area	Fairland-Beltsville	Required Adequate Public Facility	NO
Relocation Impact	None.		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY99	Estimate FY00	Total 6 Years	FY01	FY02	FY03	FY04	FY05	FY06	Beyond 6 Years
Planning, Design and Supervision	575	0	0	575	0	0	100	207	98	170	0
Land	169	0	0	169	0	0	0	0	169	0	0
Site Improvements and Utilities	590	0	0	590	0	0	0	0	100	490	0
Construction	1,216	0	0	1,216	0	0	0	0	366	850	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	2,550	0	0	2,550	0	0	100	207	733	1,510	0

FUNDING SCHEDULE ($000)

G.O. Bonds	1,664	0	0	1,664	0	0	66	102	517	979	0
Impact Tax	861	0	0	861	0	0	34	105	216	506	0
Intergovernmental	25	0	0	25	0	0	0	0	0	25	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				8	0	0	0	0	4	4	0
Energy				8	0	0	0	0	4	4	0
Net Impact				16	0	0	0	0	8	8	0

DESCRIPTION

This project provides for the reconstruction of Greencastle Road from 400 feet south of the Robey Road intersection to Greencastle Ridge Terrace (approximately 2,100 feet). The improved road will be a two-lane arterial roadway with concrete curb and gutter. The section of roadway from the Robey Road intersection to Wildlife Lane will be 50 feet wide with a separate 8-foot wide bikeway located on the west side of the road (approximately 900 feet). The remaining 1,200-foot section of the roadway from Wildlife Lane to Greencastle Ridge Terrace will be 34 feet wide consisting of two 12-foot travel lanes and two 5-foot shoulder areas marked for bike lanes. Appropriate landscaping and stormwater management facilities will be included.

Service Area

Eastern Montgomery County/ Fairland.

Capacity

The improved roadway will be designed to carry up to 15,000 vehicles per day.

JUSTIFICATION

The reconstruction of this road was requested by M-NCPPC to provide safe access to the new Fairland Regional Park. Reconstruction is also required to improve the safety of the existing roadway which is narrow with no shoulders and has poor sight distance in two locations.

Plans and Studies

The Eastern Montgomery County Master Plan designates Greencastle Road as Arterial Road A-110.

Specific Data

The existing section of roadway is the last remaining section between Columbia Pike and the County line which has not been improved. The improvements under this project will result in a continuous arterial roadway from Columbia Pike to the County line.

Cost Change

Not applicable.

STATUS

Preliminary Design

OTHER

The Intergovernmenal revenue in the funding schedule represents a reimbursement from WSSC for its share of utility relocation costs. The scope and schedule of this project are new for FY01. Planning, and preliminary design are funded from the Intersection and Spot Improvements project. Project cost may change after the stormwater management requirements for this project are determined.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		2,550
First Cost Estimate Current Scope	FY01	2,550
Last FY's Cost Estimate		0
Present Cost Estimate		2,550
Appropriation Request	FY01	0
Appropriation Request Est.	FY02	0
Supplemental Appropriation Request	FY00	0
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY98	0
New Partial Closeout	FY99	0
Total Partial Closeout		0

COORDINATION

M-NCPPC
Fairland Regional Park
Department of Permitting Services
WSSC
PEPCO
Bell Atlantic Company
Washington Gas & Light Co.
Intersection and Spot Improvements

MAP

See Map on Next Page

Greencastle Road -- No. 500100

Category	**Transportation**	Date Last Modified	**May 15, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Fairland-Beltsville**		
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	697	379	136	182	151	31	0	0	0	0	0
Land	156	3	153	0	0	0	0	0	0	0	0
Site Improvements and Utilities	540	7	50	483	428	55	0	0	0	0	0
Construction	2,114	23	700	1,391	771	620	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	3,507	412	1,039	2,056	1,350	706	0	0	0	0	0

FUNDING SCHEDULE ($000)

EDAET	126	126	0	0	0	0	0	0	0	0	0
G.O. Bonds	2,324	217	1,039	1,068	362	706	0	0	0	0	0
Contributions	44	44	0	0	0	0	0	0	0	0	0
Impact Tax	988	0	0	988	988	0	0	0	0	0	0
Intergovernmental	25	25	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				16	0	0	4	4	4	4	0
Energy				16	0	0	4	4	4	4	0
Net Impact				32	0	0	8	8	8	8	0

DESCRIPTION

This project provides for the reconstruction of Greencastle Road from 400 feet south of the Robey Road intersection to Greencastle Ridge Terrace (approximately 2,100 feet). The improved road will be a two-lane arterial roadway with concrete curb and gutter. The section of the roadway from the Robey Road intersection to Wildlife Lane will be 50-feet wide with a separate 8-foot wide bikeway located on the west side of the roadway (approximately 900 feet in length). The remaining 1,200-foot section of the roadway from Wildlife Lane to Greencastle Ridge Terrace will be 34-feet wide and consist of two 12-foot travel lanes and two 5-foot shoulder areas marked for bike lanes. Appropriate landscaping and stormwater management facilities will be included.

Service Area

Eastern Montgomery County/Fairland.

Capacity

Upon completion, the road will have a capacity of 15,000 vehicles per day.

JUSTIFICATION

The reconstruction of this road was requested by Maryland-National Capital Park and Planning Commission (M-NCPPC) to provide safe access to the new Fairland Regional Park. Reconstruction is also required to improve the safety of the existing roadway, which is narrow with no shoulders and has poor sight distance in two locations.

Plans and Studies

The Eastern Montgomery County Master Plan designates Greencastle Road as Arterial Road A-110. A pedestrian impact analysis has been completed for this project.

Cost Change

Increase due to addition of a storm water management structure (SWM), higher unit prices in pavement, complex maintenance of traffic design, and land costs.

STATUS

Final design stage.

OTHER

The Intergovernmental revenue shown in the funding schedule represents a reimbursement from Washington Suburban Sanitary Commission (WSSC). Construction has been delayed due to lengthy property acquisition process. The SWM approval was delayed and the project was also delayed due to the addition of 1,200 feet of bikepath.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		2,550
First Cost Estimate Current Scope	FY05	3,507
Last FY's Cost Estimate		2,819
Present Cost Estimate		3,507
Appropriation Request	FY07	688
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		0
Cumulative Appropriation		2,819
Expenditures/ Encumbrances		436
Unencumbered Balance		2,383
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Department of Public Works and Transportation
Department of Permitting Services
Maryland-National Capital Park and Planning Commission
Fairland Regional Park
Washington Suburban Sanitary Commission
Washington Gas
Verizon
BGE

MAP

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Montrose Parkway West -- No. 500311

Category	**Transportation**	Date Last Modified	**May 16, 2002**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Rockville**	Required Adequate Public Facility	**NO**
Relocation Impact	**Five residences.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY01	Estimate FY02	Total 6 Years	FY03	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	4,711	0	0	3,870	620	725	142	854	999	530	841
Land	28,094	0	0	23,894	9,100	7,644	7,150	0	0	0	4,200
Site Improvements and Utilities	4,366	0	0	3,748	0	0	0	200	2,050	1,498	618
Construction	24,540	0	0	21,361	0	0	500	6,300	8,000	6,561	3,179
Other	145	0	0	0	0	0	0	0	0	0	145
Total	61,856	0	0	52,873	9,720	8,369	7,792	7,354	11,049	8,589	8,983

FUNDING SCHEDULE ($000)

EDAET	4,503	0	0	4,503	680	3,823	0	0	0	0	0
G.O. Bonds	21,373	0	0	18,850	8,380	6	2,222	1,454	4,659	2,129	2,523
Impact Tax	35,980	0	0	29,520	660	4,540	5,570	5,900	6,390	6,460	6,460

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for construction of a new four-lane divided road from Montrose Road (starting 200 feet east of Tildenwood Drive) travelling east to 'old' Old Georgetown Road (approximately 5,700 feet) in the undeveloped land formerly reserved for the Rockville Facility. The typical section of the Parkway will be a closed section road with 11-foot-wide lanes and a 20-to-30-foot-wide median. A 10-foot-wide bike trail will run along the north side of the Parkway east of Old Farm Creek, and a 5-foot-wide sidewalk will run along the south side. Near Old Farm Creek the bike trail will pass under the Parkway and will continue west on the south side of the Parkway to Tildenwood Drive. Montrose Road will be widened to six lanes with a median, and 5-foot-wide sidewalks will be provided along the north side of Montrose Road from the Parkway to Tower Oaks Boulevard and along the south side from Tildenwood Drive to Tower Oaks Boulevard. Sound walls will be constructed along the north side of Montrose Road for about 1,300 feet behind homes on Farm Haven Drive in the North Farm community in Rockville and along the south side of Montrose Road for about 1,500 feet behind homes in the Old Farm community in North Bethesda. Enhanced streetscaping will be provided between East Jefferson Street and 'old' Old Georgetown Road. Other improvements include extending Hitching Post Lane to Farm Haven Drive, providing a new four-way signalized intersection with pedestrian phasing at the new Hitching Post Lane/Farm Haven Drive/Montrose Road intersection, constructing a bridge for Montrose Road over Old Farm Creek to enhance passage by riparian wildlife, and maintaining landscaping for five years after construction is complete. The southern leg of the Tildenwood Drive/Montrose Road intersection will not be widened as part of this project.

Service Area

North Bethesda-Garrett Park

Capacity

By 2020, the average daily traffic volume for Montrose Road between Tildenwood Lane and East Jefferson Street is estimated to exceed 74,000 vehicles. Without this project, several intersections will reach peak-hour Critical Lane Volumes that exceed 1,800.

JUSTIFICATION

The North Bethesda Master Plan allows for 21,000 additional jobs and 9,000 additional residences (beyond 1999), and this project is one of the master-planned transportation facilities needed to accommodate the master-planned growth. In addition, the project will provide congestion relief on Montrose Road, safe turning movements onto and off of Montrose Road, safe places for pedestrians to cross Montrose Road, and reduced cut-through traffic in neighborhoods abutting Montrose Road.

Plans and Studies

M-NCPPC North Bethesda/Garrett Park Master Plan, 1992; M-NCPPC Master Plan of Highways.

Specific Data

This project is the western portion of the master-planned Montrose Parkway. The eastern portion (east of the CSX Railroad) is currently in Phase I of Facility Planning and will be ready for final design in FY06. The Randolph Road/MD 355/Montrose Road grade-separated interchanges, including a relocated Randolph Road over the CSX Railroad, is in the planning stage by the Maryland State Highway Administration (MSHA). Schedules for both Montrose Parkway West and the MSHA are running concurrently.

STATUS

Preliminary engineering design complete.

OTHER

The scope and schedule are new for FY03. In coordination with M-NCPPC's recommendations for the Wilgus East development, the alignment of the Parkway east of East Jefferson Street has been shifted to the south. This allows for a greater distance between the Parkway and the residential development to the north. The project cost assumes acquisition of approximately 8.7 acres of the 16.7-acre Armstrong tract, the MSHA right-of-way, and approximately 130 feet of right-of-way on

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY03	($000)
Initial Cost Estimate		57,600
First Cost Estimate Current Scope	FY03	57,600
Last FY's Cost Estimate		0
Present Cost Estimate		61,856
Appropriation Request	FY03	10,445
Appropriation Request Est.	FY04	7,644
Supplemental Appropriation Request	FY02	0
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY00	0
New Partial Closeout	FY01	0
Total Partial Closeout		0

COORDINATION

Specific recommendations and design criteria have been developed in close coordination with the:
County Council
M-NCPPC
Maryland State Highway Administration
Maryland Department of Environment
Maryland Department of Natural Resources
U.S. Army Corps of Engineers
Department of Permitting Services
City of Rockville
Affected communities
Special Projects Legislation was approved May 23, 2002 (Bill No. 12-02).

MAP

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the Wilgus tract. Consistent with M-NCPPC's staff recommendation for the Wilgus East development, the project assumes dedication of a 130-foot-wide portion of Wilgus Parcel N231. Impact Tax funds are assumed for this project. Special Projects Legislation has been proposed by the County Executive.
This project is divided into two stages. Stage 1, funded for completion by FY 08, includes: (1) designing the full project; and (2) acquiring land for and construction of the project from East Jefferson Street to Tower Oaks Boulevard. Stage 2, funded after FY 08, consists of acquiring land for and construction of the project from East Jefferson Street to 'old' Old Georgetown Road, including the enhanced streetscaping in this section. Once the MSHA has programmed the funding for land acquisition and construction of the Randolph Road/MD 355/Montrose Road grade-separated interchange, the Council will reconsider the timing of Stage 2.
During the final design stage further attempts will be undertaken to reduce community impacts. One objective will be to reduce the frontage impacts and to improve parking and access for the Old Farm Pool and Paddle Tennis Club and Faith United Methodist Church.

Montrose Parkway West -- No. 500311

Category	Transportation	Date Last Modified	May 22, 2007
Agency	Public Works & Transportation	Required Adequate Public Facility	YES
Planning Area	Rockville		
Relocation Impact	Five residences.		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY06	Rem. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	5,414	3,875	212	1,327	730	461	136	0	0	0	0
Land	31,281	26,936	-3,031	7,376	2,326	2,433	1,176	1,441	0	0	0
Site Improvements and Utilities	839	37	412	390	120	120	150	0	0	0	0
Construction	30,594	9,718	-2,374	23,250	12,694	9,300	1,011	245	0	0	0
Other	7	41	-34	0	0	0	0	0	0	0	0
Total	68,135	40,607	-4,815	32,343	15,870	12,314	2,473	1,686	0	0	0

FUNDING SCHEDULE ($000)

EDAET	5,206	4,956	0	250	0	250	0	0	0	0	0
G.O. Bonds	42,383	25,868	-7,489	24,004	15,194	7,307	624	879	0	0	0
Contributions	35	0	0	35	0	0	35	0	0	0	0
Development Approval Payment	1,362	50	0	1,312	150	1,162	0	0	0	0	0
Impact Tax	17,992	9,088	2,674	6,230	526	3,595	1,302	807	0	0	0
Investment Income	18	18	0	0	0	0	0	0	0	0	0
Intergovernmental	512	0	0	512	0	0	512	0	0	0	0
Transportation Improvement Credit	625	625	0	0	0	0	0	0	0	0	0
Rental Income - Roads	2	2	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				162	0	0	0	54	54	54	0
Energy				162	0	0	0	54	54	54	0
Net Impact				324	0	0	0	108	108	108	0

DESCRIPTION

This project provides a new four-lane divided road from a point on Montrose Road (starting 600 feet east of Tildenwood Drive) eastward to 'old' Old Georgetown Road (approximately 5,300 feet) in the undeveloped land formerly reserved for the Rockville Facility. The typical section of the Parkway will be a closed section road with 11-foot wide lanes and a 12- to 30-foot wide median. A 10-foot wide bikeway will run along the north side of the Parkway east of Old Farm Creek, and a 5-foot wide sidewalk will run along the south side. Near Old Farm Creek the bikeway will pass under the Parkway and will continue westward on the south side of the Parkway to Tildenwood Drive. The 10-foot wide bikeway will continue westward from a point on Tildenwood Drive approximately 550 feet south of Montrose Road to the Montrose Road/North Farm Lane intersection within the land formerly reserved for the Rockville Facility. Montrose Road will be widened to six lanes with a median, and five-foot wide sidewalks will be provided along the north side of Montrose Road from the Parkway to Tower Oaks Boulevard and along the south side from Tildenwood Drive to Tower Oaks Boulevard. Noise barrier walls will be constructed along the north side of Montrose Road for about 1,300 feet behind homes on Farm Haven Drive in the North Farm community in Rockville and along the south side of Montrose Road for about 1,700 feet behind homes in the Old Farm community in North Bethesda. A berm will be provided along Montrose Road behind the homes on the northern side of Tildenwood Lane to the east of Tildenwood Drive. Enhanced streetscaping will be provided between East Jefferson Street and 'old' Old Georgetown Road. Other improvements include extending Hitching Post Lane to Farm Haven Drive, providing a new four-way signalized intersection with pedestrian phasing at the new Hitching Post Lane/Farm Haven Drive/Montrose Road intersection, constructing a bridge on Montrose Road over Old Farm Creek to enhance wildlife passage, and maintaining landscaping for five years after construction is complete. The southern leg of the Tildenwood Drive/Montrose Road intersection will not be widened as part of this project.

Service Area

North Bethesda-Garrett Park.

Capacity

By 2020, the Average Daily Traffic (ADT) volume for Montrose Road between Tildenwood Lane and East Jefferson Street is estimated to exceed 74,000 vehicles. Without this project, several Montrose Road intersections will fail.

JUSTIFICATION

The North Bethesda Master Plan allows for 21,000 additional jobs and 9,000 additional residences (beyond 1999), and this project is one of the master-planned transportation facilities needed to accommodate the master-planned growth. In addition, the project will provide congestion relief on Montrose Road, safe turning

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY03	($000)
Initial Cost Estimate		57,600
First Cost Estimate Current Scope	FY05	68,175
Last FY's Cost Estimate		68,135
Present Cost Estimate		68,135
Appropriation Request	FY08	0
Supplemental Appropriation Request	FY07	0
Transfer		0
Cumulative Appropriation		68,135
Expenditures/ Encumbrances		66,108
Unencumbered Balance		2,027
Partial Closeout Thru	FY05	0
New Partial Closeout	FY06	0
Total Partial Closeout		0

COORDINATION

Maryland Department of the Environment
U. S. Army Corps of Engineers
Maryland Department of Natural Resources
Department of Permitting Services
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration
Washington Suburban Sanitary Commission
Washington Gas
PEPCO
City of Rockville
Montgomery County Department of Environmental Protection
Miscellaneous Stream Valley Improvements

MAP

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movements onto and off of Montrose Road, safe places for pedestrians to cross Montrose Road, and reduced cut-through traffic in neighborhoods abutting Montrose Road.

Plans and Studies

North Bethesda/Garrett Park Master Plan 1992, and Master Plan of Highways. A pedestrian impact analysis has been completed for this project.

Cost Change

Accelerate expenditures and funding to reflect the actual production schedule.

STATUS

Under construction.

OTHER

The construction cost increase is offset by lower estimated utility relocation costs. As a permit requirement the project includes the construction of a bio-retention facility at the Tilden Woods Park and participation in the costs associated with the construction of 1,200 linear feet of the Booze Creek Stream Stabilization project. The project cost assumes acquisition of approximately 7.4 acres of the 16.7-acre Armstrong tract, the MSHA right-of-way, and an approximately 130 foot right-of-way on the Wilgus tract. Consistent with M-NCPPC's staff recommendation for the Wilgus East development, the project assumes dedication of a 130-foot wide portion of Wilgus Parcel N231.

FISCAL NOTE

The intergovernmental and contribution revenue represent WSSC's share of the utility costs and developer's share of the project costs, respectively. Impact Tax funds are assumed for this project. Negative amounts in the Remaining FY06 column represent acceleration of funding.

Montrose Parkway West -- No. 500311

Category	Transportation	Date Last Modified	January 11, 2008
Subcategory	Roads	Required Adequate Public Facility	Yes
Administering Agency	Public Works & Transportation	Relocation Impact	None.
Planning Area	Rockville	Status	Under Construction

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY07	Est. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	5,483	4,422	618	443	443	0	0	0	0	0	0
Land	31,281	27,125	2,787	1,369	1,369	0	0	0	0	0	0
Site Improvements and Utilities	1,136	267	869	0	0	0	0	0	0	0	0
Construction	32,387	21,343	6,499	4,545	4,545	0	0	0	0	0	0
Other	91	91	0	0	0	0	0	0	0	0	0
Total	**70,378**	**53,248**	**10,773**	**6,357**	**6,357**	**0**	**0**	**0**	**0**	**0**	**0**

FUNDING SCHEDULE ($000)

Contributions	35	0	0	35	35	0	0	0	0	0	0
Development Approval Payment	1,362	987	375	0	0	0	0	0	0	0	0
G.O. Bonds	44,081	31,634	9,246	3,201	3,201	0	0	0	0	0	0
Impact Tax	18,492	14,731	1,152	2,609	2,609	0	0	0	0	0	0
Investment Income	63	63	0	0	0	0	0	0	0	0	0
Intergovernmental	512	0	0	512	512	0	0	0	0	0	0
Transportation Improvement Credit	625	625	0	0	0	0	0	0	0	0	0
Rental Income - Roads	2	2	0	0	0	0	0	0	0	0	0
EDAET	5,206	5,206	0	0	0	0	0	0	0	0	0
Total	**70,378**	**53,248**	**10,773**	**6,357**	**6,357**	**0**	**0**	**0**	**0**	**0**	**0**

OPERATING BUDGET IMPACT ($000)

Maintenance				270	0	54	54	54	54	54
Energy				270	0	54	54	54	54	54
Net Impact				**540**	**0**	**108**	**108**	**108**	**108**	**108**

DESCRIPTION

This project provides a new four-lane divided road from a point on Montrose Road (starting 600 feet east of Tildenwood Drive) eastward to 'old' Old Georgetown Road (approximately 5,300 feet) in the undeveloped land formerly reserved for the Rockville Facility. The typical section of the Parkway will be a closed section road with 11-foot wide lanes and a 12- to 30-foot wide median. A 10-foot wide bikeway will run along the north side of the Parkway east of Old Farm Creek, and a 5-foot wide sidewalk will run along the south side. Near Old Farm Creek the bikeway will pass under the Parkway and will continue westward on the south side of the Parkway to Tildenwood Drive. The 10-foot wide bikeway will continue westward from a point on Tildenwood Drive approximately 550 feet south of Montrose Road to the Montrose Road/North Farm Lane intersection within the land formerly reserved for the Rockville Facility. Montrose Road will be widened to six lanes with a median, and five-foot wide sidewalks will be provided along the north side of Montrose Road from the Parkway to Tower Oaks Boulevard and along the south side from Tildenwood Drive to Tower Oaks Boulevard. Noise barrier walls will be constructed along the north side of Montrose Road for about 1,300 feet behind homes on Farm Haven Drive in the North Farm community in Rockville and along the south side of Montrose Road for about 1,700 feet behind homes in the Old Farm community in North Bethesda. A berm will be provided along Montrose Road behind the homes on the northern side of Tildenwood Lane to the east of Tildenwood Drive. Enhanced streetscaping will be provided between East Jefferson Street and 'old' Old Georgetown Road. Other improvements include extending Hitching Post Lane to Farm Haven Drive, providing a new four-way signalized intersection with pedestrian phasing at the new Hitching Post Lane/Farm Haven Drive/Montrose Road intersection, constructing a bridge on Montrose Road over Old Farm Creek to enhance wildlife passage, and maintaining landscaping for five years after construction is complete. The southern leg of the Tildenwood Drive/Montrose Road intersection will not be widened as part of this project.

CAPACITY

By 2020, the Average Daily Traffic (ADT) Volume for Montrose Road between Tildenwood Lane and East Jefferson Street is estimated to exceed 74,000 vehicles. Without this project, several Montrose Road intersections will fail.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY03	($000)
First Cost Estimate Current Scope	FY09	70,378
Last FY's Cost Estimate		68,135
Appropriation Request	FY09	2,243
Appropriation Request Est.	FY10	0
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		68,135
Expenditures / Encumbrances		67,557
Unencumbered Balance		578
Partial Closeout Thru	FY06	0
New Partial Closeout	FY07	0
Total Partial Closeout		0

COORDINATION

Maryland Department of the Environment
U. S. Army Corps of Engineers
Maryland Department of Natural Resources
Department of Permitting Services
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration
Washington Suburban Sanitary Commission
Washington Gas
PEPCO
City of Rockville
Montgomery County Department of Environmental Protection
Miscellaneous Stream Valley Improvements
Special Capital Projects Legislation [Bill No. 12-02] was adopted by Council May 23, 2002.

MAP

See Map on Next Page

COST CHANGE
Increase due to actual bid prices, allowance for additional construction costs associated with previously unknown underground utility conflicts along East Jefferson Street, and the addition of PEPCO charges to connect and energize streetlights, which was not previously included.

JUSTIFICATION
The North Bethesda Master Plan allows for 21,000 additional jobs and 9,000 additional residences (beyond 1999), and this project is one of the master-planned transportation facilities needed to accommodate the master-planned growth. In addition, the project will provide congestion relief on Montrose Road, safe turning movements onto and off of Montrose Road, safe places for pedestrians to cross Montrose Road, and reduced cut-through traffic in neighborhoods abutting Montrose Road.

North Bethesda/Garrett Park Master Plan 1992, and Master Plan of Highways.

OTHER
As a permit requirement the project includes the construction of a bio-retention facility at the Tilden Woods Park and participation in the costs associated with the construction of 1,200 linear feet of the Booze Creek Stream Stabilization project. The project cost assumes acquisition of approximately 7.4 acres of the 16.7-acre Armstrong tract, the MSHA right-of-way, and an approximately 130 foot right-of-way on the Wilgus tract. Consistent with M-NCPPC's staff recommendation for the Wilgus East development, the project assumes dedication of a 130-foot wide portion of Wilgus Parcel N231.

FISCAL NOTE
The intergovernmental and contribution revenue represent WSSC's share of the utility costs and developer's share of the project costs, respectively. Impact Tax funds are assumed for this project.

OTHER DISCLOSURES
- A pedestrian impact analysis has been completed for this project.
- Land acquisition will be funded initially through ALARF, and then reimbursed by a future appropriation from this project. The total cost of this project will increase when land expenditures are programmed.

Nebel Street Extended -- No. 500401

Category	**Transportation**	Date Last Modified	**January 10, 2004**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**7-49(04 App)**
Planning Area	**North Bethesda-Garrett Park**	Required Adequate Public Facility	**NO**
Relocation Impact	**None**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY03	Est. FY04	Total 6 Years	FY05	FY06	FY07	FY08	FY09	FY10	Beyond 6 Years
Planning, Design and Supervision	680	0	300	380	232	93	55	0	0	0	0
Land	6,190	0	50	6,140	0	3,910	2,230	0	0	0	0
Site Improvements and Utilities	446	0	0	446	0	225	221	0	0	0	0
Construction	3,936	0	0	3,936	0	0	3,936	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	11,252	0	350	10,902	232	4,228	6,442	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	11,010	0	108	10,902	232	4,228	6,442	0	0	0	0
Contributions	0	0	0	0	0	0	0	0	0	0	0
Development Approval Payment	242	0	242	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				12	0	0	0	4	4	4	0
Energy				3	0	0	0	1	1	1	0
Net Impact				15	0	0	0	5	5	5	0

DESCRIPTION

This project provides a 1,300 foot extension of Nebel Street from its existing terminus at Randolph Road to a proposed terminus at the Target store site. The proposed roadway improvements include: 1) a 4-lane closed section roadway (typical section includes four 12-foot travel lanes), 2) a 5-foot concrete sidewalk adjacent to a 7-foot tree panel along the west side of the road, 3) an 8-foot asphalt, bike path adjacent to a 7-foot wide tree panel along the east side of the road, 4) streetlighting and landscape trees provided on both sides of the roadway, 5) improvements at the intersection of Nebel Street and Randolph Road, and 6) modification of the existing traffic signal at the intersection of Chapman and Bou Avenues.

Service Area

North Bethesda/Garrett Park Planning Area.

Capacity

Upon completion, the roadway will have a capacity of 13,000 vehicles per day.

JUSTIFICATION

This project is needed to relieve traffic congestion along MD 355 between the White Flint Mall and Twinbrook Parkway area. In addition, Nebel Street Extended would be a component of a local circulation network parallel to Rockville Pike that is essential to the overall transportation goals of the region. The project offers redundancy for shorter, more focused trips and facilitates pedestrian movements. Nebel Street Extended will link the employment areas adjacent to the Metro Stations at White Flint and Twinbrook and provide access to the proposed MARC station at Montrose Crossing. The sidewalk and bike path provide a foundation for a safe, convenient and well-connected system for pedestrians and bicyclists, as outlined in the master plan.

Plans and Studies

This road is classified as business road B-5 in the North Bethesda/Garrett Park Master Plan. A project prospectus was completed and funded under the Facility Planning-Transportation project. A review of impacts to pedestrians, bicyclists and the requirements of the ADA (Americans with Disabilities Act of 1991) is being performed and addressed by this project. Traffic signals, streetlights, crosswalks, bus stops, sidewalk ramps, bikeways and other pertinent issues are being considered in the design of the project to ensure pedestrian safety. This project is a part of the Executive's Go Montgomeryl program.

Cost Change

Increase due to the addition of the remaining elements of the project: construction management, land, site improvements, utility and construction costs.

STATUS

Final design stage.

OTHER

The FY04 supplemental appropriation provided for final design. The developer is responsible for design and construction of the project from the intersection of Bou Avenue and Chapman Avenue to the south end of the developer's property including the dedication of the right-of-way. The developer will construct full width pavement with curb and gutter, bikepath, sidewalk, streetlights, and landscaping. The County has signed the MOU and the developer signature is pending.

APPROPRIATION AND EXPENDITURE DATA

		($000)
Date First Appropriation	FY04	
Initial Cost Estimate		482
First Cost Estimate Current Scope	FY05	11,252
Last FY's Cost Estimate		482
Present Cost Estimate		11,252
Appropriation Request	FY05	4,328
Appropriation Request Est.	FY06	6,442
Supplemental Appropriation Request	FY04	0
Transfer		0
Cumulative Appropriation		482
Expenditures/ Encumbrances		273
Unencumbered Balance		209
Partial Closeout Thru	FY02	0
New Partial Closeout	FY03	0
Total Partial Closeout		0

COORDINATION

Facility Planning: Transportation
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration-Randolph Road Relocated Project
WMATA
PEPCO
Department of Permitting Services
Verizon
WSSC
CSXT
Developers
City of Rockville
Maryland Transit Administration (MARC Train)

Special Capital Projects Legislation was approved May 27, 2004 (Bill No. 11-04)

MAP

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Nebel Street Extended -- No. 500401

Category	Transportation	Date Last Modified	May 16, 2007
Agency	Public Works & Transportation	Required Adequate Public Facility	NO
Planning Area	North Bethesda-Garrett Park		
Relocation Impact	None		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY06	Rem. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	673	392	1	280	36	3	3	190	48	0	0
Land	6,392	43	4,200	2,149	0	1,074	1,075	0	0	0	0
Site Improvements and Utilities	494	92	1	401	0	0	0	0	401	0	0
Construction	4,451	0	0	4,451	0	0	0	3,561	890	0	0
Other	1	1	0	0	0	0	0	0	0	0	0
Total	12,011	528	4,202	7,281	36	1,077	1,078	3,751	1,339	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	11,769	286	4,202	7,281	36	1,077	1,078	3,751	1,339	0	0
Development Approval Payment	242	242	0	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				20	0	0	5	5	5	5	0
Energy				20	0	0	5	5	5	5	0
Net Impact				40	0	0	10	10	10	10	0

DESCRIPTION

This project is to provide a 1,300 foot extension of Nebel Street from its existing terminus at Randolph Road to a terminus at the Target store site. The proposed roadway improvements include: a 4-lane closed section roadway with a typical cross section that includes four 12-foot travel lanes; a 5-foot concrete sidewalk adjacent to a 7-foot tree panel along the west side of the road; an 8-foot asphalt bike path adjacent to a 7-foot wide tree panel along the east side of the road, streetlighting and landscape trees provided on both sides of the roadway; improvements at the intersection of Nebel Street and Randolph Road; and modification of the existing traffic signal at the intersection of Chapman and Bou Avenues.

Service Area

North Bethesda/Garrett Park Planning Area and City of Rockville.

Capacity

Upon completion, the roadway will have a capacity of 13,000 vehicles per day.

JUSTIFICATION

This project is needed to relieve traffic congestion along MD 355 between the White Flint Mall and Twinbrook Parkway area. In addition, Nebel Street Extended would be a component of a local circulation network parallel to Rockville Pike that is essential to the overall transportation goals of the region. The project offers redundancy for shorter, more focused trips and facilitates pedestrian movements. Nebel Street Extended will link the employment areas adjacent to the Metro Stations at White Flint and Twinbrook and provide access to the proposed MARC station at Montrose Crossing. The sidewalk and bike path provide a foundation for a safe, convenient and well-connected system for pedestrians and bicyclists, as outlined in the Master Plan.

Plans and Studies

This road is classified as business road B-5 in the North Bethesda/Garrett Park Master Plan. A project prospectus was completed and funded under the Facility Planning:-Transportation project. Pedestrian safety was considered during design.

Cost Change

Increase due to inflation. Delayed construction due to extended time needed for right-of-way acquisition.

STATUS

Final design stage.

OTHER

The developer completed design and construction of the project from the intersection of Bou Avenue and Chapman Avenue to the south end of the developer's property.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY04	($000)
Initial Cost Estimate		482
First Cost Estimate Current Scope	FY05	11,252
Last FY's Cost Estimate		12,011
Present Cost Estimate		12,011
Appropriation Request	FY08	0
Supplemental Appropriation Request	FY07	0
Transfer		0
Cumulative Appropriation		12,011
Expenditures/ Encumbrances		632
Unencumbered Balance		11,379
Partial Closeout Thru	FY05	0
New Partial Closeout	FY06	0
Total Partial Closeout		0

COORDINATION

Facility Planning: Transportation
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration-Randolph Road Relocated Project
Washington Metropolitan Area Transit Authority
PEPCO
Department of Permitting Services
Verizon
Washington Suburban Sanitary Commission
CSXT
Developers
City of Rockville
Maryland Transit Administration (MARC Train)

MAP

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Nebel Street Extended -- No. 500401

Category	Transportation	Date Last Modified	January 09, 2008
Subcategory	Roads	Required Adequate Public Facility	No
Administering Agency	Public Works & Transportation	Relocation Impact	None.
Planning Area	North Bethesda-Garrett Park	Status	Final Design Stage

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY07	Est. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	758	406	0	352	0	173	179	0	0	0	0
Land	7,487	1,670	3,673	2,144	1,078	1,066	0	0	0	0	0
Site Improvements and Utilities	94	92	0	2	0	0	2	0	0	0	0
Construction	5,590	0	0	5,590	0	2,512	3,078	0	0	0	0
Other	2	2	0	0	0	0	0	0	0	0	0
Total	**13,931**	**2,170**	**3,673**	**8,088**	**1,078**	**3,751**	**3,259**	**0**	**0**	**0**	**0**

FUNDING SCHEDULE ($000)

Development Approval Payment	242	242	0	0	0	0	0	0	0	0	0
G.O. Bonds	12,047	286	3,673	8,088	1,078	3,751	3,259	0	0	0	0
PAYGO	1,642	1,642	0	0	0	0	0	0	0	0	0
Total	**13,931**	**2,170**	**3,673**	**8,088**	**1,078**	**3,751**	**3,259**	**0**	**0**	**0**	**0**

OPERATING BUDGET IMPACT ($000)

Maintenance				15	0	0	0	5	5	5
Energy				15	0	0	0	5	5	5
Net Impact				**30**	**0**	**0**	**0**	**10**	**10**	**10**

DESCRIPTION

This project is to provide a 1,300 foot extension of Nebel Street from its existing terminus at Randolph Road to a terminus at the Target store site. The proposed roadway improvements include: a 4-lane closed section roadway with a typical cross section that includes four 12-foot travel lanes; a 5-foot concrete sidewalk adjacent to a 7-foot tree panel along the west side of the road; an 8-foot asphalt bike path adjacent to a 7-foot wide tree panel along the east side of the road, streetlighting and landscape trees provided on both sides of the roadway; improvements at the intersection of Nebel Street and Randolph Road; and modification of the existing traffic signal at the intersection of Chapman and Bou Avenues.

COST CHANGE

Increases in land costs, construction costs, and construction management costs due to the delays associated with the property acquisition.

JUSTIFICATION

This project is needed to relieve traffic congestion along MD 355 between the White Flint Mall and Twinbrook Parkway area. In addition, Nebel Street Extended would be a component of a local circulation network parallel to Rockville Pike that is essential to the overall transportation goals of the region. The project offers redundancy for shorter, more focused trips and facilitates pedestrian movements. Nebel Street Extended will link the employment areas adjacent to the Metro Stations at White Flint and Twinbrook and provide access to the proposed MARC station at Montrose Crossing. The sidewalk and bike path provide a foundation for a safe, convenient and well-connected system for pedestrians and bicyclists, as outlined in the Master Plan. This road is classified as business road B-5 in the North Bethesda/Garrett Park Master Plan. A project prospectus was completed and funded under the Facility Planning: Transportation project.

OTHER

Special Capital Projects Legislation will be proposed by the County Executive.

The developer completed design and construction of the project from the intersection of Bou Avenue and Chapman Avenue to the south end of the developer's property.

OTHER DISCLOSURES

- A pedestrian impact analysis has been completed for this project.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY04	($000)
First Cost Estimate Current Scope	FY05	11,252
Last FY's Cost Estimate		12,011
Appropriation Request	FY09	1,920
Appropriation Request Est.	FY10	0
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		12,011
Expenditures / Encumbrances		2,412
Unencumbered Balance		9,599
Partial Closeout Thru	FY06	0
New Partial Closeout	FY07	0
Total Partial Closeout		0

COORDINATION

Facility Planning: Transportation
Maryland-National Capital Park and Planning Commission
Maryland State Highway Administration-Randolph Road Relocated Project
Washington Metropolitan Area Transit Authority
PEPCO
Department of Permitting Services
Verizon
Washington Suburban Sanitary Commission
CSXT
Developers
City of Rockville
Maryland Transit Administration (MARC Train)

MAP

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Redland Rd from Crabbs Branch Way to Needwood Rd -- No. 500010

Category	Transportation	Date Last Modified	May 17, 1999
Agency	Public Works & Transportation	Previous PDF Page Number	NONE
Planning Area	Gaithersburg Vicinity	Required Adequate Public Facility	NO
Relocation Impact	None.		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY98	Remaining FY98	Total 6 Years	FY99	FY00	FY01	FY02	FY03	FY04	Beyond 6 Years
Planning, Design and Supervision	306	0	0	306	0	110	166	30	0	0	0
Land	100	0	0	100	0	0	100	0	0	0	0
Site Improvements and Utilities	490	0	0	490	0	0	200	290	0	0	0
Construction	1,000	0	0	1,000	0	0	700	300	0	0	0
Other											
Total	1,896	0	0	1,896	0	110	1,166	620	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	1,896	0	0	1,896	0	110	1,166	620	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for reconstruction of a segment of Redland Road including the intersections with Crabbs Branch Way and Needwood Road for congestion mitigation. Anticipated improvements include: widening a portion of Redland Road from Crabbs Branch Way to Needwood Road, construction of additional turning lanes, installation of traffic improvement devices, and storm drain modifications as needed.

JUSTIFICATION

Studies conducted by DPW&T Division of Traffic and Parking Services and comprehensive consultant studies indicate significant congestion in this roadway segment. Physical modifications to these intersections will improve the level of service and reduce operational problems at these intersections as follows:

Capacity: Upon completion, the AM Level of Service (LOS) of the Crabbs Branch Road intersection will be improved from "D" to "C," with a reduction in Critical Lane Volumes (CLV) of 129 vehicles. The PM LOS will be improved from "F" to "C" with a reduction in CLV of 441 vehicles. Likewise, upon completion, the AM LOS of the Needwood Road intersection will be improved from "F" to "C," with a reduction in CLV of 466 vehicles. The PM LOS will be improved from "E" to "B" with a reduction in CLV of 412 vehicles.

Plans and Studies

Accident and Congestion Studies

Cost Change

Not applicable

STATUS

Conceptual Design

OTHER

This new project is part of a coordinated effort to mitigate congestion at some of the County's most congested intersections.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY00	($000)
Initial Cost Estimate		1,896
First Cost Estimate Current Scope	FY00	1,896
Last FY's Cost Estimate		0
Present Cost Estimate		1,896
Appropriation Request	FY00	200
Supplemental Appropriation Request	FY99	0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Capitalization Thru	FY97	0
New Capitalization	FY98	0
Total Capitalization		0

COORDINATION

Intersection and Spot Improvements (No. 507017)
M-NCPPC
MSHA
Department of Permitting Services
Department of Environmental Protection
Utilities

MAP

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Redland Rd from Crabbs Branch Way - Braederwood La -- No. 500010

Category	**Transportation**	Date Last Modified	**May 18, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Gaithersburg Vicinity**		
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	1,369	670	152	547	54	300	193	0	0	0	0
Land	218	1	217	0	0	0	0	0	0	0	0
Site Improvements and Utilities	699	1	0	698	0	0	698	0	0	0	0
Construction	2,678	3	200	2,475	250	1,489	736	0	0	0	0
Other	1	1	0	0	0	0	0	0	0	0	0
Total	4,965	676	569	3,720	304	1,789	1,627	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	4,330	52	569	3,709	304	1,778	1,627	0	0	0	0
Development Approval Payment	474	474	0	0	0	0	0	0	0	0	0
Intergovernmental	161	150	0	11	0	11	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				4	0	0	1	1	1	1	0
Energy				16	0	0	4	4	4	4	0
Net Impact				20	0	0	5	5	5	5	0

DESCRIPTION

This project provides for reconstruction of a segment of Redland Road including the intersections with Crabbs Branch Way and Needwood Road for congestion mitigation. Anticipated improvements include: widening a portion of Redland Road from Crabbs Branch Way to Braederwood Lane, construction of additional turning lanes, installation of traffic improvement devices, storm drain modifications as needed, and an 8' mixed use bike path/sidewalk (Class I). The bike path will be located within the project limits on the north side of Redland Road and the east side of Needwood Road.

Service Area

Gaithersburg vicinity.

Capacity

AM level of service (LOS) of the Crabbs Branch Way intersection will be improved from D to C, and PM LOS from F to B. AM LOS of the Needwood Road intersection will be improved from F to C and PM LOS from E to B.

JUSTIFICATION

Studies conducted by DPWT Traffic Engineering and Operations Section and Parking Operations Section and comprehensive consultant studies indicate significant congestion in this roadway segment. In addition to the improved level of service, the project will reduce the operational problems at these intersections. The addition of the bike path will provide access to the Shady Grove Metro Station.

Plans and Studies

A pedestrian impact analysis has been completed for this project.

Cost Change

Increase due to a significant scope change.

STATUS

Final design stage

OTHER

Scope was changed in July 2003 to: delete reversible lane, add 5th lane and class 1 bike path, align lane reconfiguration, add fill at dam which resulted in additional right-of-way requirements and greater utility impacts. The project was not included in the FY05-10 CIP because reliable schedule and cost estimates to reflect the July 2003 scope were not available in time for publication.

FISCAL NOTE

DAP collected through FY05 is included in this project. Intergovernmental revenue is comprised of DEP contribution of up to $150K for dam repair, and $11K from WSSC for water and sewer adjustments.

APPROPRIATION AND EXPENDITURE DATA

		($000)
Date First Appropriation	FY00	
Initial Cost Estimate		1,896
First Cost Estimate Current Scope	FY07	4,965
Last FY's Cost Estimate		3,410
Present Cost Estimate		4,965
Appropriation Request	FY07	1,555
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		0
Cumulative Appropriation		3,410
Expenditures/ Encumbrances		771
Unencumbered Balance		2,639
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Intersection and Spot Improvements Project
Department of Environmental Protection
Department of Permitting Services
M-NCPPC
Potomac Electric Power Company
Verizon
Comcast
Washington Suburban Sanitary Commission

MAP

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Redland Rd from Crabbs Branch Way - Braederwood La -- No. 500010

Category	Transportation	Date Last Modified	January 09, 2008
Subcategory	Traffic Improvements	Required Adequate Public Facility	No
Administering Agency	Public Works & Transportation	Relocation Impact	None.
Planning Area	Gaithersburg Vicinity	Status	Final Design Stage

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY07	Est. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	1,504	1,161	35	308	100	208	0	0	0	0	0
Land	124	42	82	0	0	0	0	0	0	0	0
Site Improvements and Utilities	69	8	0	61	0	61	0	0	0	0	0
Construction	3,757	248	1,760	1,749	974	775	0	0	0	0	0
Other	2	2	0	0	0	0	0	0	0	0	0
Total	**5,456**	**1,461**	**1,877**	**2,118**	**1,074**	**1,044**	**0**	**0**	**0**	**0**	**0**

FUNDING SCHEDULE ($000)

Development Approval Payment	474	474	0	0	0	0	0	0	0	0	0
G.O. Bonds	4,807	826	1,877	2,104	1,074	1,030	0	0	0	0	0
Intergovernmental	175	161	0	14	0	14	0	0	0	0	0
Total	**5,456**	**1,461**	**1,877**	**2,118**	**1,074**	**1,044**	**0**	**0**	**0**	**0**	**0**

OPERATING BUDGET IMPACT ($000)

Maintenance				20	0	0	5	5	5	5
Energy				20	0	0	5	5	5	5
Net Impact				**40**	**0**	**0**	**10**	**10**	**10**	**10**

DESCRIPTION

This project provides for reconstruction of a segment of Redland Road including the intersections with Crabbs Branch Way and Needwood Road for congestion mitigation. Anticipated improvements include: widening a portion of Redland Road from Crabbs Branch Way to Braederwood Lane, construction of additional turning lanes, installation of traffic improvement devices, storm drain modifications as needed, and an 8' mixed use bike path/sidewalk (Class I). The bike path will be located within the project limits on the north side of Redland Road and the east side of Needwood Road.

CAPACITY

AM level of service (LOS) of the Crabbs Branch Way intersection will be improved from D to C, and PM LOS from F to B. AM LOS of the Needwood Road intersection will be improved from F to C and PM LOS from E to B.

COST CHANGE

Increase due to revisions to Redland/Crabbs Branch Way intersection geometry for pedestrian safety and Maryland Department of the Environment regulated work scope changes and higher material costs.

JUSTIFICATION

Studies conducted by DPWT Division of Traffic and Parking Services and comprehensive consultant studies indicate significant congestion in this roadway segment. In addition to the improved level of service, the project will reduce the operational problems at these intersections. The addition of the bike path will provide access to the Shady Grove Metro Station.

FISCAL NOTE

Development Approval Payment collected through FY05 is included in this project. Intergovernmental revenue is comprised of DEP contribution of up to $150,000 for dam repair, and $25,000 from Washington Suburban Sanitary Commission for water and sewer adjustments.

OTHER DISCLOSURES

- A pedestrian impact analysis has been completed for this project.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY00	($000)
First Cost Estimate Current Scope	FY09	5,456
Last FY's Cost Estimate		4,965
Appropriation Request	FY09	491
Appropriation Request Est.	FY10	0
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		4,965
Expenditures / Encumbrances		1,610
Unencumbered Balance		3,355
Partial Closeout Thru	FY06	0
New Partial Closeout	FY07	0
Total Partial Closeout		0

COORDINATION

Intersection and Spot Improvements Project
Department of Environmental Protection
Department of Permitting Services
M-NCPPC
Potomac Electric Power Company
Verizon
Comcast
Washington Suburban Sanitary Commission
Maryland Department of the Environment

MAP

See Map on Next Page

Stringtown Road Extended -- No. 500403

Category	**Transportation**	Date Last Modified	**May 16, 2003**
Agency	**Public Works & Transportation**	Previous PDF Page Number	**NONE**
Planning Area	**Clarksburg**	Required Adequate Public Facility	**NO**
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY02	Remain FY02	Total 6 Years	FY03	FY04	FY05	FY06	FY07	FY08	Beyond 6 Years
Planning, Design and Supervision	1,646	0	0	1,646	200	699	234	239	274	0	0
Land	1,072	0	0	1,072	0	0	1,072	0	0	0	0
Site Improvements and Utilities	1,330	0	0	1,330	0	0	0	500	830	0	0
Construction	4,782	0	0	4,782	0	0	0	2,160	2,622	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	8,830	0	0	8,830	200	699	1,306	2,899	3,726	0	0

FUNDING SCHEDULE ($000)

Development District	1,600	0	0	1,600	0	0	0	750	850	0	0
G.O. Bonds	4,722	0	0	4,722	146	0	957	1,573	2,046	0	0
Development Approval Payment	512	0	0	512	0	512	0	0	0	0	0
Impact Tax	1,906	0	0	1,906	54	187	349	576	740	0	0
Intergovernmental	90	0	0	90	0	0	0	0	90	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides for the final design, right-of-way acquisition and construction of 2,400 foot extension of Stringtown Road westward from MD 355 to I-270 ramps at existing MD Route 121. This road will be a four-lane divided closed section arterial highway with two lanes in each direction. It will include a 5-foot sidewalk on the south side, an 8-foot bike path on the north side, street trees and street lights within a 120-foot right of way. Appropriate auxiliary lanes and traffic signals will be provided at the intersections with MD 355 and with Gateway Center Drive. The project will also include Stormwater Management facilities required to meet all environmental permit requirements.

Service Area

Clarksburg

Capacity

The projected ADT for the year 2020 is 40,000 vehicles per day.

JUSTIFICATION

The Clarksburg Town Center and other master planned developments are under construction and/or in the approval process. This master planned arterial roadway is required to provide access to development in various stages in the pipeline. The Stringtown Road Extension will also serve to redirect traffic away from the Clarksburg Historic District.

Plans and Studies

The project prospectus and the preliminary plans were completed and funded under the Facility Planning: Transportation project. The Clarksburg Master Plan & Hyattstown Special Study Area (June 1994) includes the extension of Stringtown Road from MD 355 to I-270 ramps as an arterial road that would connect MD 355 to the proposed Mid-County Arterial (A-305). DPWT report title, "Traffic Operations Study - proposed Stringtown Road Extension" May 2001.

Cost Change

Not Applicable

STATUS

Preliminary design stage.

OTHER

Preliminary design costs were funded under Facility Planning: Transportation project. The costs shown as intergovernmental are for WSSC reimbursement of their share of relocation costs.

FISCAL NOTE

Impact tax for this project is assumed at 26.7 percent of the project cost within the Clarksburg Impact Tax Area. The Town Center Development District participation reflects a pro-rated share of what otherwise would be G.O. Bond funded. Town Center Development District participation would not exceed $1,600,000. The Impact Tax share of the project has been adjusted accordingly.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		8,830
First Cost Estimate		
Current Scope	FY03	8,830
Last FY's Cost Estimate		0
Present Cost Estimate		8,830
Appropriation Request	FY04	1,072
Supplemental Appropriation Request	FY03	1,133
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY01	0
New Partial Closeout	FY02	0
Total Partial Closeout		0

COORDINATION

Department of Permitting Services
Department of Environmental Protection
WSSC
WGL
Allegheny Power
M-NCPPC
Utilities
Clarksburg Town Center Development District

MAP

See Map on Next Page

Stringtown Road Extended -- No. 500403

Category	**Transportation**	Date Last Modified	**January 6, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Clarksburg**		
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	1,459	782	533	144	144	0	0	0	0	0	0
Land	487	28	459	0	0	0	0	0	0	0	0
Site Improvements and Utilities	1,296	2	322	972	972	0	0	0	0	0	0
Construction	5,568	0	3,685	1,883	1,883	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	8,810	812	4,999	2,999	2,999	0	0	0	0	0	0

FUNDING SCHEDULE ($000)

Development District	1,600	0	750	850	850	0	0	0	0	0	0
G.O. Bonds	0	0	0	0	0	0	0	0	0	0	0
Contributions	970	0	700	270	270	0	0	0	0	0	0
Development Approval Payment	512	0	512	0	0	0	0	0	0	0	0
Impact Tax	5,614	708	3,027	1,879	1,879	0	0	0	0	0	0
Investment Income	104	104	0	0	0	0	0	0	0	0	0
Intergovernmental	10	0	10	0	0	0	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				35	0	7	7	7	7	7	0
Energy				50	0	10	10	10	10	10	0
Net Impact				85	0	17	17	17	17	17	0

DESCRIPTION

This project provides for the final design, right-of-way acquisition and construction of a 2,400 foot extension of Stringtown Road westward from Frederick Road (MD 355) to I-270 ramps at existing MD 121. This road will be a four-lane divided closed section arterial highway with two lanes in each direction. It will include a five-foot sidewalk on the south side, an eight-foot bike path on the north side, street trees and streetlights within a 120-foot right of way. Appropriate auxiliary lanes and traffic signals will be provided at the intersections with MD 355 and with Gateway Center Drive.

Capacity

The projected Average Daily Traffic (ADT) for the year 2020 is 40,000 vehicles per day.

JUSTIFICATION

The Clarksburg Town Center and other master planned developments are under construction and/or in the approval process. This master planned arterial roadway is required to provide access to development in various stages, and will also serve to redirect traffic away from the Clarksburg Historic District.

Plans and Studies

The Clarksburg Master Plan and Hyattstown Special Study Area (June 1994) includes the extension of Stringtown Road from MD 355 to I-270 ramps as an arterial road that would connect MD 355 to the proposed Mid-County Arterial (A-305). Pedestrian safety was considered during design.

Cost Change

Transferred $20k to Advanced Reforestation.

STATUS

Final design stage.

OTHER

An agreement has been reached with Gateway Commons, LLC. to construct a portion of the project, Gateway Center Drive to MD 355. The developer contribution is 35 percent of the costs.

FISCAL NOTE

The Town Center Development District participation would not exceed $1,600k.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		8,830
First Cost Estimate Current Scope	FY04	8,830
Last FY's Cost Estimate		8,830
Present Cost Estimate		8,810
Appropriation Request	FY07	0
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		-20
Cumulative Appropriation		8,830
Expenditures/ Encumbrances		4,454
Unencumbered Balance		4,376
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Department of Permitting Services
Department of Environmental Protection
Washinton Suburban Sanitary Commission
Washington Gas
Verizon
Allegheny Power
Clarksburg Town Center Development District
Maryland-National Park and Planning Commission

MAP

See Map on Next Page

Woodfield Road Extended -- No. 500151

Category	Transportation	Date Last Modified	May 17, 2000
Agency	Public Works & Transportation	Previous PDF Page Number	NONE
Planning Area	Damascus	Required Adequate Public Facility	NO
Relocation Impact	None.		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY99	Estimate FY00	Total 6 Years	FY01	FY02	FY03	FY04	FY05	FY06	Beyond 6 Years
Planning, Design and Supervision	1,409	0	0	1,409	278	168	0	400	563	0	0
Land	945	0	0	945	0	0	645	300	0	0	0
Site Improvements and Utilities	1,205	0	0	1,205	0	0	0	0	1,205	0	0
Construction	4,641	0	0	4,641	0	0	0	2,000	2,641	0	0
Other											
Total	8,200	0	0	8,200	278	168	645	2,700	4,409	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	8,200	0	0	8,200	278	168	645	2,700	4,409	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

DESCRIPTION

This project provides funds for the design, land acquisition, and construction of the 3,000-foot extension of Woodfield Road from its current terminus at a point 1,200 feet north of Main Street (MD 108) to Ridge Road (MD 27). In addition, the scope of work includes the design, land acquisition, and construction of improvements to a 2,450 foot segment of MD 27 from a point 450 feet south of the existing MD 27/Faith Lane intersection to a point 1,100 feet north of the MD 27/Gue Road intersection. The proposed roadway improvements include: 1) The extension of Woodfield Road as a 28-foot wide closed-section roadway with two 14-foot wide shared lanes for motor vehicles and bicycles. 2) The provision of auxiliary left-turn lanes on Woodfield Road Extended at Faith Lane and MD 27. 3) The realignment of Faith Lane to intersect Woodfield Road at a point 350 feet south of MD 27. 4) The construction of an 8-foot wide class I bike path along the eastern side of Woodfield Road Extended from the current terminus of the roadway to MD 27. 5) An 800-foot extension of the existing sidewalk along the eastern side of Woodfield Road from the Damascus Library to the proposed 8-foot wide class I bike path. 6) Widening MD 27 to provide two 12-foot wide travel lanes, two four-foot wide paved shoulders, and an auxiliary left-turn lane at the intersection with Woodfield Road. 7) Revisions to the MD 27 vertical alignment to improve the sight distance along a 2,100-foot segment of the roadway between Faith Lane and a point 1,200 feet north of Gue Road. 8) Streetlighting. 9) Landscaping. Woodfield Road Extended and the MD 27 improvements will be constructed within an 80-foot wide right-of-way.

Service Area

Damascus and vicinity.

Capacity

The design year 2020 projected average daily traffic (ADT) volume is 20,000 vehicles.

JUSTIFICATION

This project is needed to alleviate traffic congestion in the Damascus business district. MD 27 and MD 124 connect northern Montgomery County with the major employment centers along the I-270 corridor. Roadway portions along MD 27 and MD 108 within the town of Damascus are congested, unsafe, and have poor sight distance. Traffic forecasts and analyses show that five intersections in the town will begin to fail shortly after the year 2010 without the construction of Woodfield Road Extended.

Plans and Studies

A project prospectus was completed and funded under the Facility Planning: Transportation project. Woodfield Road Extended is designated as an arterial road in the Damascus Master Plan.

Specific Data

The construction of Woodfield Road will reduce the projected volume of traffic in year 2020 along the segment of MD 27 between Woodfield Road and High Corner Street from 28,000 to 17,500 vehicles per day. In addition, the projected traffic volume in the year 2020 on MD 27 between High Corner Street and MD 108 will be lowered from 19,100 to 5,400 vehicles per day.

Cost Change

Not applicable

STATUS

Preliminary Design Stage.

OTHER

The scope and schedule for this project are new in FY01. Preliminary design costs were funded from the Facility Planning: Transportation project.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		415
First Cost Estimate Current Scope	FY01	415
Last FY's Cost Estimate		0
Present Cost Estimate		8,200
Appropriation Request	FY01	446
Appropriation Request Est.	FY02	0
Supplemental Appropriation Request	FY00	0
Transfer		0
Cumulative Appropriation		0
Expenditures/ Encumbrances		0
Unencumbered Balance		0
Partial Closeout Thru	FY98	0
New Partial Closeout	FY99	0
Total Partial Closeout		0

COORDINATION

Damascus Park and Ride Lot
Facility Planning: Transportation
Allegheny Power
Bell Atlantic
Cable TV Montgomery
Washington Gas and Light
Maryland Department of the Environment
MSHA
M-NCPPC
Maryland Historical Trust

MAP

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Woodfield Road Extended -- No. 500151

Category	**Transportation**	Date Last Modified	**May 18, 2006**
Agency	**Public Works & Transportation**	Required Adequate Public Facility	**NO**
Planning Area	**Damascus**		
Relocation Impact	**None.**		

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY05	Est. FY06	Total 6 Years	FY07	FY08	FY09	FY10	FY11	FY12	Beyond 6 Years
Planning, Design and Supervision	2,058	876	407	775	142	633	0	0	0	0	0
Land	1,805	112	1,055	638	638	0	0	0	0	0	0
Site Improvements and Utilities	813	3	0	810	13	797	0	0	0	0	0
Construction	6,767	0	0	6,767	1,398	5,369	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Total	11,443	991	1,462	8,990	2,191	6,799	0	0	0	0	0

FUNDING SCHEDULE ($000)

G.O. Bonds	8,785	961	1,377	6,447	851	5,596	0	0	0	0	0
Contributions	30	30	0	0	0	0	0	0	0	0	0
Impact Tax	2,446	0	85	2,361	1,340	1,021	0	0	0	0	0
Intergovernmental	182	0	0	182	0	182	0	0	0	0	0

ANNUAL OPERATING BUDGET IMPACT ($000)

Maintenance				16	0	0	4	4	4	4	0
Energy				8	0	0	2	2	2	2	0
Net Impact				24	0	0	6	6	6	6	0

DESCRIPTION

This project provides a 3,000 foot extension of Woodfield Road from 1,200 feet north of Main Street, (MD 108), to Ridge Road, (MD 27). The scope of work includes the design, land acquisition, and construction of a 1,450 foot segment of Ridge Road from 450 feet south of the existing Ridge Road / Faith Lane intersection to 300 feet north of the Ridge Road / Gue Road intersection. The roadway improvements include: extension of Woodfield Road as a 28-foot wide closed-section roadway with two 14-foot wide traffic lanes; provision of auxiliary left-turn lanes on Woodfield Road at Faith Lane and Ridge Road; realignment of Faith Lane to intersect Woodfield Road at a point 350 feet south of Ridge Road; construction of a seperated 8-foot wide bikeway along the eastern side of Woodfield Road Extended from Main Street to Ridge Road; widening Ridge Road to provide two 12-foot wide travel lanes, two 4-foot wide paved shoulders, and an auxiliary left turn lane at the proposed intersection with Woodfield Road; revisions to the Ridge Road vertical alignment to improve the sight distance along a 600 foot segment of the roadway to north of Woodfield Road Extended; *and streetlighting and landscaping.* Woodfield Road Extended and Ridge Road improvements will be constructed within an 80-foot wide right-of-way.

Service Area

Damascus and vicinity. Woodfield Road Extended is designated an arterial road in the Damascus Master Plan.

Capacity

The design year 2020 projected Average Daily Traffic (ADT) volume is 20,000 vehicles.

JUSTIFICATION

This project is needed to alleviate traffic congestion and improve safety and sight distance in the Damascus business area. Traffic forecasts and analysis show that five intersections in the town will begin to fail shortly after the year 2010 without the construction of Woodfield Road Extended. The construction of Woodfield Road will reduce the projected traffic volume in year 2020 along Ridge Road between Woodfield Road and High Corner Street from 28,000 to 17,500 vehicles per day, and on Ridge Road between High Corner Street and Main Street traffic volume will be lowered from 19,100 to 5,400 vehicles per day.

Plans and Studies

A pedestrian impact analysis has been *completed for this project.*

Cost Change

Increase due to inflation. Total cost of this project has been decreased by $67k which is now programmed in the Advanced Reforestation project.

STATUS

Final design stage.

FISCAL NOTE

The intergovernmental and contribution revenue represent Washington Suburban Sanitary Commission's (WSSC) share of utility relocation costs and the developer's share of the project costs, respectively.

APPROPRIATION AND EXPENDITURE DATA

Date First Appropriation	FY01	($000)
Initial Cost Estimate		8,200
First Cost Estimate Current Scope	FY05	9,600
Last FY's Cost Estimate		9,600
Present Cost Estimate		11,443
Appropriation Request	FY07	1,843
Appropriation Request Est.	FY08	0
Supplemental Appropriation Request	FY06	0
Transfer		0
Cumulative Appropriation		9,600
Expenditures/ Encumbrances		1,202
Unencumbered Balance		8,398
Partial Closeout Thru	FY04	0
New Partial Closeout	FY05	0
Total Partial Closeout		0

COORDINATION

Damascus Park and Ride Lot
Facility Planning: Transportation
Utilities
Maryland Department of the Environment
Maryland State Highway Administration
Maryland-National Capital Park and Planning Commission
Maryland Historical Trust

MAP

See Map on Next Page

Woodfield Road Extended -- No. 500151

Category	Transportation	Date Last Modified	January 11, 2008
Subcategory	Roads	Required Adequate Public Facility	No
Administering Agency	Public Works & Transportation	Relocation Impact	None
Planning Area	Damascus	Status	Final Design Stage

EXPENDITURE SCHEDULE ($000)

Cost Element	Total	Thru FY07	Est. FY08	Total 6 Years	FY09	FY10	FY11	FY12	FY13	FY14	Beyond 6 Years
Planning, Design, and Supervision	2,453	1,218	496	739	392	301	46	0	0	0	0
Land	2,199	195	2,004	0	0	0	0	0	0	0	0
Site Improvements and Utilities	570	5	0	565	0	0	565	0	0	0	0
Construction	9,303	0	6,000	3,303	208	299	2,796	0	0	0	0
Other	2	2	0	0	0	0	0	0	0	0	0
Total	**14,527**	**1,420**	**8,500**	**4,607**	**600**	**600**	**3,407**	**0**	**0**	**0**	**0**

FUNDING SCHEDULE ($000)

Contributions	30	30	0	0	0	0	0	0	0	0	0
G.O. Bonds	11,913	1,390	7,395	3,128	0	0	3,128	0	0	0	0
Impact Tax	2,446	0	1,105	1,341	600	600	141	0	0	0	0
Intergovernmental	138	0	0	138	0	0	138	0	0	0	0
Total	**14,527**	**1,420**	**8,500**	**4,607**	**600**	**600**	**3,407**	**0**	**0**	**0**	**0**

OPERATING BUDGET IMPACT ($000)

Maintenance				24	0	0	0	8	8	8
Energy				21	0	0	0	7	7	7
Net Impact				**45**	**0**	**0**	**0**	**15**	**15**	**15**

DESCRIPTION

This project provides a 3,000-foot extension of Woodfield Road from 1,200 feet north of Main Street, (MD 108), to Ridge Road, (MD 27). The scope of work includes the design, land acquisition, and construction of a 1,450 foot segment of Ridge Road from 450 feet south of the existing Ridge Road / Faith Lane intersection to 300 feet north of the Ridge Road / Gue Road intersection. The roadway improvements include: extension of Woodfield Road as a 28-foot wide closed-section roadway with two 14-foot wide traffic lanes; provision of auxiliary left-turn lanes on Woodfield Road at Faith Lane and Ridge Road; realignment of Faith Lane to intersect Woodfield Road at a point 350 feet south of Ridge Road; construction of a separated 8-foot wide bikeway along the eastern side of Woodfield Road Extended from Main Street to Ridge Road; widening Ridge Road to provide two 12-foot wide travel lanes, two 4-foot wide paved shoulders, an auxiliary left turn lane at the proposed intersection with Woodfield Road; streetlighting; and landscaping. Woodfield Road Extended and Ridge Road improvements will be constructed within an 80-foot wide right-of-way.

CAPACITY

The design year 2020 projected Average Daily Traffic (ADT) volume is 20,000 vehicles.

COST CHANGE

Increase due to higher material costs and additional permitting requirements added to the scope of the project.

JUSTIFICATION

This project is needed to alleviate traffic congestion and improve safety and sight distance in the Damascus business area. Traffic forecasts and analysis show that five intersections in the town will begin to fail shortly after the year 2010 without the construction of Woodfield Road Extended. The construction of Woodfield Road will reduce the projected traffic volume in year 2020 along Ridge Road between Woodfield Road and High Corner Street from 28,000 to 17,500 vehicles per day, and on Ridge Road between High Corner Street and Main Street traffic volume will be lowered from 19,100 to 5,400 vehicles per day.

OTHER

Special Capital Projects Legislation will be proposed by the County Executive.

FISCAL NOTE

The intergovernmental and contribution revenue represent Washington Suburban Sanitary Commission's (WSSC) share of utility relocation costs and the developer's share of the project costs, respectively. The two year construction delay is due to locating and obtaining approval of a viable wetland mitigation site from regulatory agencies and resource constraints.

OTHER DISCLOSURES

APPROPRIATION AND EXPENDITURE DATA		
Date First Appropriation	FY01	($000)
First Cost Estimate Current Scope	FY09	14,527
Last FY's Cost Estimate		11,443
Appropriation Request	FY09	3,084
Appropriation Request Est.	FY10	0
Supplemental Appropriation Request		0
Transfer		0
Cumulative Appropriation		11,443
Expenditures / Encumbrances		2,484
Unencumbered Balance		8,959
Partial Closeout Thru	FY06	0
New Partial Closeout	FY07	0
Total Partial Closeout		0

COORDINATION

Northern Damascus Park and Ride Lot
Facility Planning: Transportation
Allegheny Power
Washington Suburban Sanitary Commission
Verizon
Maryland Department of the Environment
Army Corp of Engineers
Maryland State Highway Administration
Maryland-National Capital Park and Planning Commission
Maryland Historical Trust

MAP

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APPENDIX B:

Explanation of Inflation Adjustment Methodology

This appendix describes the methodology used by OLO to calculate the inflation-adjusted project cost estimates shown in Chapters IV and V of this report. As discussed in Chapter II, the County CIP shows future year expenditures in constant dollars, that is, without any inflation adjustment. OLO sought to convert constant dollar project cost estimates into estimates that took into account the effects of inflation.

The inflated estimates presented in this report adjust future year planned project expenditures (shown in the first approved PDF) based on historic inflation rates. OLO used three indices to calculate the effects of inflation on initial project cost estimates.

1. ***Engineering News-Record (ENR)* Construction Cost Index.** This regional index measures the historic rate of inflation for public works construction projects based on local labor rates, local prices for cement and lumber, and national prices for structural steel. (Note: this index does not factor in prices for asphalt, a major cost component for road projects.) For this report, OLO used the *ENR* Construction Cost Index for the Baltimore Region.

2. **U.S. Bureau of Labor Statistics, Consumer Price Index (CPI-U).** This regional index measures the average change in the prices paid by urban consumers for a market basket of consumer goods and services. For this report, OLO used the CPI-U for the Washington-Baltimore region.

3. **Land Price Escalator (10% Per Year).** OLO found no credible regional index of inflation for unimproved land. While several real estate cost indices exist, these measures include variations in the cost of buildings and other structures and do not isolate the cost of unimproved land. OLO consulted with representatives of both State and County agencies that assess the cost of unimproved land (the State Department of Assessment and Taxation and the County Department of Parks). These sources suggested using an assumed average annual land inflation rate of 10% for the time frame of the road projects studied in this report. (DPWT reports that certain parcels of land experienced cost increases as high as 15 to 20% in some years).

OLO applied these indices to the expenditures shown by cost category in the first approved project description form (PDF) for a road project. The table below indicates which index OLO applied to each PDF cost category

Cost Category	Inflation Index
Planning, Design, Supervision	Consumer Price Index
Land	Land Price Escalator (10%)
Site Improvements, Utilities	*ENR* Construction Cost Index
Construction	*ENR* Construction Cost Index
Other	Consumer Price Index

OLO applied different inflation multipliers based on the first year of the project and the anticipated year of expenditure. For example, the table below shows the different inflation adjustors used for a project that first appeared in the CIP in FY03 and included planned expenditures in each of the following three fiscal years. In this example, to adjust for inflation, OLO increased construction expenditures shown in the PDF in constant dollars for FY04 by 5.2%; construction expenditures planned for FY05 by 12.8%; and construction expenditures planned for FY06 by 17.3%.

Inflation Index	FY03	FY04	FY05	FY06
ENR Construction Cost Index	0.0%	5.2%	12.8%	17.3%
CPI-U	0.0%	2.2%	5.8%	10.2%
Land Price Escalator	0.0%	10.0%	21.0%	33.1%

OLO summed the inflation-adjusted expenditures for all years and all PDF categories to obtain the total inflated cost of the project.

The original cost estimates for some projects included planned expenditures in FY08 and FY09. As the actual inflation rates for these years are not yet known, OLO assumed inflation rates equal to the average rate for the previous five years.

The tables on the following three pages show the full set of inflation multipliers used in this report.

ENR Construction Cost Index[1]

Annual Index

FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
4324.86	4544.51	4502.11	4534.38	4564.19	4532.08	4542.29	4580.15	4818.78	5166.87	5374.45	5377.71

Percent Changes between Years

		Year of Planned Expenditure										
		FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Year of Initial Cost Estimate	FY96	5.08%	4.10%	4.84%	5.53%	4.79%	5.03%	5.90%	11.42%	19.47%	24.27%	24.34%
	FY97	--	-0.93%	-0.22%	0.43%	-0.27%	-0.05%	0.78%	6.04%	13.69%	18.26%	18.33%
	FY98	--	--	0.72%	1.38%	0.67%	0.89%	1.73%	7.03%	14.77%	19.38%	19.45%
	FY99	--	--	--	0.66%	-0.05%	0.17%	1.01%	6.27%	13.95%	18.53%	18.60%
	FY00	--	--	--	--	-0.70%	-0.48%	0.35%	5.58%	13.20%	17.75%	17.82%
	FY01	--	--	--	--	--	0.23%	1.06%	6.33%	14.01%	18.59%	18.66%
	FY02	--	--	--	--	--	--	0.83%	6.09%	13.75%	18.32%	18.39%
	FY03	--	--	--	--	--	--	--	5.21%	12.81%	17.34%	17.41%
	FY04	--	--	--	--	--	--	--	--	7.22%	11.53%	11.60%
	FY05	--	--	--	--	--	--	--	--	--	4.02%	4.08%
	FY06	--	--	--	--	--	--	--	--	--	--	0.06%

[1] *ENR* Construction Cost Index cited with permission from *Engineering News-Record.*

Consumer Price Index (CPI-U)

Annual Index

FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
100.0	100.4	101.0	102.8	105.4	108.9	110.9	114.6	117.1	121.3	126.3	130.0

Percent Changes between Years

		Year of Planned Expenditure										
		FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Year of Initial Cost Estimate	FY96	0.40%	1.00%	2.80%	5.40%	8.90%	10.90%	14.60%	17.10%	21.30%	26.30%	30.00%
	FY97	--	0.60%	2.39%	4.98%	8.47%	10.46%	14.14%	16.63%	20.82%	25.80%	29.48%
	FY98	--	--	1.78%	4.36%	7.82%	9.80%	13.47%	15.94%	20.10%	25.05%	28.71%
	FY99	--	--	--	2.53%	5.93%	7.88%	11.48%	13.91%	18.00%	22.86%	26.46%
	FY00	--	--	--	--	3.32%	5.22%	8.73%	11.10%	15.09%	19.83%	23.34%
	FY01	--	--	--	--	--	1.84%	5.23%	7.53%	11.39%	15.98%	19.38%
	FY02	--	--	--	--	--	--	3.34%	5.59%	9.38%	13.89%	17.22%
	FY03	--	--	--	--	--	--	--	2.18%	5.85%	10.21%	13.44%
	FY04	--	--	--	--	--	--	--	--	3.59%	7.86%	11.02%
	FY05	--	--	--	--	--	--	--	--	--	4.12%	7.17%
	FY06	--	--	--	--	--	--	--	--	--	--	2.93%

Land Price Escalator

Annual Index

FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
100.00	110.00	121.00	133.10	146.41	161.05	177.16	194.87	214.36	235.79	259.37	285.31

Percent Changes between Years

		Year of Planned Expenditure										
		FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07
Year of Initial Cost Estimate	FY96	10.00%	21.00%	33.10%	46.41%	61.05%	77.16%	94.87%	114.36%	135.79%	159.37%	185.31%
	FY97	--	10.00%	21.00%	33.10%	46.41%	61.05%	77.16%	94.87%	114.36%	135.79%	159.37%
	FY98	--	--	10.00%	21.00%	33.10%	46.41%	61.05%	77.16%	94.87%	114.36%	135.79%
	FY99	--	--	--	10.00%	21.00%	33.10%	46.41%	61.05%	77.16%	94.87%	114.36%
	FY00	--	--	--	--	10.00%	21.00%	33.10%	46.41%	61.05%	77.16%	94.87%
	FY01	--	--	--	--	--	10.00%	21.00%	33.10%	46.41%	61.05%	77.16%
	FY02	--	--	--	--	--	--	10.00%	21.00%	33.10%	46.41%	61.05%
	FY03	--	--	--	--	--	--	--	10.00%	21.00%	33.10%	46.41%
	FY04	--	--	--	--	--	--	--	--	10.00%	21.00%	33.10%
	FY05	--	--	--	--	--	--	--	--	--	10.00%	21.00%
	FY06	--	--	--	--	--	--	--	--	--	--	10.00%