III. Alternatives Considered – E
2. Build Alternatives

3. Corridor 1 and Corridor 2 Non-Tolled Options

Non-tolled options for Corridor 1 and Corridor 2 were dropped from further consideration for two reasons: (a) tolls would be necessary to help fund the project and (b) tolls would be needed to effectively manage traffic demand and congestion on the new highway.

Preliminary estimates indicated that the cost to build the ICC would be at least $1.98 billion. Current estimates, as shown in ***Table S-2***, indicate that the cost would range from $1.98 to $2.15 billion. A cost of this magnitude would require cost-effective financing options. Traditionally, the primary source of funding for the vast majority of Maryland's transportation projects has been the Maryland Transportation Trust Fund (TTF). The TTF is not currently funded, nor can it be expected to be funded, at a level that, alone, without additional funding sources, could fund a project of the magnitude of the ICC. If the TTF alone were used to fund the ICC, MDOT's ability to address other pressing transportation needs throughout the State would be adversely affected. Numerous other worthwhile projects would have to be deferred or shelved. Toll revenue financing is a logical and appropriate funding source to help fund a project of the magnitude of the ICC.

In addition to serving as a critical source of funding to implement a project, tolls can be an effective tool in managing congestion. Congestion management continues to be an issue of statewide and regional importance, and is a key goal of the ICC. It is anticipated that, over time, demand to use the ICC would exceed the capacity of the roadway. Variably priced tolls can provide an effective means of managing traffic demand to more desirable levels of service, resulting in more economic and efficient use of the roadway. Value pricing would help manage congestion, provide for a more predictable trip time, allow for more effective transit use of a highway, and result in environmental benefits.

E. Alternatives Retained for Detailed Study (ARDS)

Considering the results of preliminary planning analyses, public comments generated from the November 2003 Alternatives Public Workshops, and agency comments, the Lead Agencies developed a series of alternatives and options for detailed study and presented them in an *ICC, I 270 to US 1, ARDS* report dated March 3, 2004 (SHA, 2004). This report was distributed to the ICC Interagency Working Group (IAWG) members, including the USACE and the MDE. The USACE and the MDE concurred on the ARDS in April and May 2004, respectively.

The alternatives and options presented in the ARDS report were similar to those presented at the November 2003 Alternatives Public Workshops. This section describes in detail the three alternatives that evolved from the alternatives screening process and were presented for consideration in the DEIS and at the January 2005 Public Hearings.

These alternatives are:

- No-Action
- Corridor 1
- Corridor 2

Based upon comments received from the public and regulatory agencies, several studies of alignment refinements for Corridors 1 and 2 were made subsequent to publication of the DEIS. The refinements resulting from these studies are summarized in the introductory descriptions of Corridors 1 and 2 with the text for Corridors 1 and 2 reflecting the adopted refinements.

1. No-Action

The No-Action (or No-Build) Alternative serves as a baseline scenario to compare with the Build Alternatives. With this alternative, no substantial improvement would be made to east-west transportation facilities in the study area beyond those improvements included in the TPB's CLRP for 2030. Routine maintenance and minor improvements such as highway resurfacing and safety improvements, and adjustment of bus routes to accommodate new development, would continue. In addition, localized improvements, such as the addition of turn lanes at intersections, would occur. However, none of these improvements would substantially improve overall east-west transportation in the study area.

The major roadway and transit elements of the CLRP include (please refer to the *ICC Travel Analysis Technical Report* (SHA, 2004) for a complete listing of the highway and transit elements of the CLRP):

- I-95/Contee Road interchange
- I-270 Improvement: I-370 to I-70
- US 1 widening to 6 lanes: Cherry Hill Road to I-495
- US 29 upgrade (to expressway): MD 650 to Howard County Line (currently under construction)
- MD 28/MD 198 upgrade and widening: MD 97 to I-95
- MD 28/MD 97 interchange
- MD 212 Relocated: US 1 to I-95
- MD 355/Montrose Road/Randolph Road interchange
- Montrose Parkway: Existing Montrose Road to Old Georgetown Road
- Bi-County Transitway: Bethesda to New Carrollton
- Corridor Cities Transitway: Shady Grove Metrorail Station to Clarksburg

In addition, the No-Action Alternative assumes implementation of the Travel Demand Management measures included in the CLRP. These measures apply throughout the Washington Metropolitan area.

The improvements included in the No-Action Alternative are assumed to be in place in 2030 regardless of the ICC alternative being considered. Thus, this alternative is the baseline for the transportation analysis of each alternative.

2. Build Alternatives

As noted earlier, Corridor 1 and Corridor 2 would include the following basic features:

- Limited access highway with interchanges spaced throughout the facility
- Multi-modal highway (transit, bicycle, and pedestrian routes)
- Variable treatments for SWM
- Landscaping
- Intelligent Transportation Systems, such as variable message signs
- Fully Electronic Toll Collection (ETC) with no toll plazas

In addition, the basic design elements of the Build Alternatives would include the following:

- 60 mph design speed
- Six basic lanes (three per direction)
- Variable typical sections, with a median of variable width (varying from 26 feet in especially sensitive areas to 50 feet, depending upon sight distance and SWM requirements)
- Guardrail, retaining walls, and other roadside treatments to reduce the road's footprint
- Noise barriers and screening where warranted, feasible, and reasonable
- Minimized impact in park areas, using minimal cut, long bridges at major stream crossings, and environmentally sensitive construction techniques
- Environmental Stewardship features
- Express bus service and park-and-ride lots

a. Tolls

The ICC would be a toll highway from east of Shady Grove METRO Access Road to US 1. It would be owned by the Maryland Transportation Authority (MdTA), which would manage the ICC as a part of the MdTA's toll facility system.

The specific details of toll rates, policies, and practices for the ICC will be determined by the MdTA prior to opening of the roadway to traffic. For illustrative purposes, however, the discussion below outlines current expectations and issues under consideration.

Toll Rates: Toll rates will be set by the Maryland Transportation Authority to achieve the two goals listed below:

- to generate adequate revenue to cover operating costs of the facility, to make a substantial contribution to its capital cost, and, to contribute to the funding available for the MdTA's system of toll highways, tunnels, and bridges, and
- to manage traffic demand and congestion on the ICC roadway.

In setting tolls to achieve the two goals stated above, consideration would also be given to the desire to maximize use of the ICC so as to decrease traffic on alternative routes.

This Final Impact Statement (FEIS) does not include a recommendation, nor will the ICC study team determine the toll rates to be set for users of the ICC. It is not intended that the Record of Decision regarding this project stipulate or affect ICC toll rates. Nevertheless, it is appropriate for the purposes of this study to make assumptions about the toll rates that may be adopted for

this facility in the future. These assumptions have been developed based on the preliminary forecasts available during the study.

Specifically, for planning purposes, this study assumed a 17-cent per mile peak rate and a 13-cent per mile off-peak rate (expressed in 2004 dollars). Additionally, the study analyzed effects of higher and lower toll rates, which are, respectively:

- 25-cent per mile peak rate/17-cent per mile off-peak rate, expressed in 2004 dollars
- 13-cent per mile peak rate/8-cent per mile off-peak rate, expressed in 2004 dollars to illustrate sensitivity of traffic demand to possible toll rates

The toll rates to be set by the MdTA for the ICC would likely be different from those studied in conjunction with preparation of the DEIS and this FEIS. However, based on analysis documented in this report, it is not expected that the use of different rates would result in substantially different environmental and community impacts.

After the project opens, the ICC toll rates would be revised periodically as needed to meet funding requirements and to manage traffic volumes and congestion. To address congestion, a policy could be established to review and potentially revise toll rates on the ICC at regular intervals.

Use of Tolls for Revenue Generation: Current forecasts and traffic analysis indicate that, at least during initial years of operation, each of the three toll rates studied for planning purposes would adequately manage traffic demand and congestion on the ICC. Thus, in initial years of operation, toll rates might be based more on the need to generate adequate revenue than to regulate traffic demand. In this regard, it is important to note that the rates selected for initial years of operation might be higher than the 17-cent per mile/13-cent per mile rate in order to generate adequate revenue.

Use of Toll Rates to Manage Congestion: When travel demand on the ICC approaches the desired LOS threshold, toll rates may be adjusted to manage traffic flow, reducing congestion and providing predictable travel times. The benefits of effective congestion management are:

- Persons using a facility (motorists and users of public transit on the facility) can be assured of traveling at relatively rapid and predictable speeds, with minimized delays that might otherwise be encountered
- Potentially unsafe conditions associated with start-and-stop driving conditions in a congested environment can be minimized
- Environmental and social impacts associated with congestion can be minimized
- Environmental impacts that would be associated with a facility designed to accommodate the full, unconstrained traffic demand can be diminished

To effectively manage traffic volumes and congestion, toll rates would need to be set at rates sufficiently high enough to discourage trips on the ICC in excess of desired volumes. As indicated above, for planning purposes, the ICC study team assumed a baseline rate (17-cent per mile rate during peak periods; 13-cent per mile rate for off-peak periods), and also conducted a

sensitivity analysis to assess the potential effects of toll rates that are higher and lower than the baseline rate. The sensitivity analysis showed that higher toll rates could effectively manage congestion levels on the ICC, without substantially increasing traffic volumes on other roads in the study area. For the results of that sensitivity analysis, see ***Chapter IV.J***.

It is important to note that the toll rates required to effectively manage traffic to acceptable congestion levels could be different. Over time, growth in traffic demand on the ICC could necessitate substantially higher toll rates.

Toll-Related Impacts: The ICC would not include toll barriers, so the collection of tolls would not affect the footprint of the facility and thus would not require additional ROW. Because tolls have the potential to affect traffic volumes on the ICC and on other roads, which in turn could affect traffic-related impacts, tolling is considered when addressing traffic-related impacts of the ICC, such as air quality and noise impacts. Tolls have also been considered in addressing environmental justice and community impacts.

Minimum/maximum toll rates: Use of minimum and maximum toll rates in combination with a per mile rate structure would be considered. For example, a minimum toll rate of 50 cents or $1.00 might apply even if a very short trip would otherwise result in a lesser toll according to the per mile rate in effect. A maximum toll rate would cap the toll at a specified amount, even if the per mile rate applied to a long distance trip would otherwise result in a higher toll. Minimum and maximum tolls rates help adjust and control the relative proportions of short and longer distance trips, and can be useful in managing congestion in specific locations when caused by a high volume of short distance trips.

Variation by Time of Day/Congestion Levels: Variable tolls can be "semi-static;" i.e., with pre-established rates during defined peak and non-peak periods, or "dynamic"; i.e., rates that would change more frequently – even within peak periods - in response to actual real-time variations in measured traffic volumes. Both semi-static and dynamic structures are being considered for the ICC; however, it is probable that the semi-static would be preferred. Dynamic pricing works best where there is an immediately adjacent free alternative route, thus allowing motorists to make a "market" decision based on immediately-observed toll rates and levels of congestion on the two alternative routes. Because there is no free route immediately adjacent to the ICC, the "semi-static" variable pricing toll rate structure might be more appropriate for the ICC – allowing motorists to plan their trip and route, knowing in advance what the cost on the ICC would be.

Variation by Segment: Managed roadway variable tolls can be set at a consistent rate throughout the entire facility, or vary by location if substantially higher traffic demand in particular segments requires higher rates to manage traffic. Both options are being considered for the ICC; however, it is anticipated that toll rates would be applied consistently on all sections of the roadway. This kind of rate structure is more easily communicated to potential users.

Variation by Collection Methodology and Payment Type: Toll rates would likely vary by collection methodology and type of payment. (For discussion of collection methodology, see below). Vehicles equipped with E-ZPass^{SM} transponders could pay a base toll rate. The toll rate

for motorists without E-ZPass℠ transponders, but who have arranged a video tolling account, would be incrementally higher, reflecting the higher processing costs associated with a video tolling collection system. Those motorists who neither have E-ZPass℠ transponders nor have a video tolling account could be subject to higher administrative fees and higher charges reflecting their status as a toll violator.

Variation by Vehicle Class: Toll rates could also vary by class of vehicle (e.g., trucks would pay more than automobiles). It is currently anticipated that all vehicles using the ICC would be charged a toll.

Tolls would be collected through a combination of electronic (E-ZPass℠ transponder) and video toll collection. A cash collection option is not envisioned. To assure a high level of accuracy in the collection of tolls from commercial vehicles, consideration would be given to requiring all trucks to have E-ZPass℠ transponders.

E-ZPass℠ Collection: A motorist with an E-ZPass℠ transponder in his or her vehicle has a pre-established, pre-paid account. This account would be automatically debited when the vehicle passed under a toll equipment gantry spanning the roadway.

Video Toll Collection: Video tolling would work in a similar fashion. Motorists would arrange a video toll account prior to, or immediately after a trip on the ICC. The account would likely be arranged by phone, internet, or in person at E-ZPass℠ offices or other locations. Video equipment on the roadway would match the license plate image with the registered license plate number established under the account.

Motorists who use the ICC without an E-ZPass℠ transponder or an established video toll account would be considered toll violators. Video equipment on the roadway would record the license plate image. The registered owner of the vehicle would be billed through the mail.

With use of electronic transponders and video tolling, tolls could be collected at highway speeds. There would be no need for motorists to slow down and pass through a toll barrier. The costs and impacts related to toll barriers (additional pavement/ROW acquisition/potential delay to motorists) would be avoided.

b. Major Drainage Crossings

In October/November 2003, representatives of local, State, and Federal agencies made site visits to the major drainage crossings along the ICC Build Alternatives then under consideration. These included all stream crossings with a drainage area of 0.5 square mile or more, as well as several smaller crossings of a particularly sensitive nature. Agencies represented at some or all of the meetings included: the USACE, U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), National Park Service (NPS), MDE, Maryland Department of Natural Resources (DNR), and the M-NCPPC. Also in attendance were representatives of the FHWA, SHA, and Montgomery County DPW&T.

Considering the comments made during the site visits as well as subsequent coordination with the agencies, preliminary structure types were selected and shown in the DEIS at the numerous

crossings. Further coordination regarding the major drainage crossings has taken place since the publication of the DEIS, as well as more detailed planning studies. The crossing types and sites have thus been refined and are shown on the engineering plates and discussed in ***Chapter IV.F.5*** of the FEIS.

c. Stormwater Management

A conservative approach toward protecting water resources through SWM has been established for the ICC. The regulations governing SWM for all SHA and MdTA projects are enforced by the MDE. MDE enforces both State and Federal level permit(s) and approvals with regard to SWM and erosion and sediment control (ESC). MDE performs plan review, approval, and permit issuance functions for all applicable SHA and MdTA projects, as well as for other State and Federal agencies having projects in Maryland.

ICC studies include alternatives within two watershed sub basins, the Washington Metropolitan Area (02-14-02) and the Patuxent River Area (02-13-11), as designated by MDE (Code Of Maryland Regulations (COMAR) 26.08.02.08). In these watershed sub-basins, ICC alternatives would cross up to eight subwatersheds (***Table III-1***). MDE regulations assign Use Classifications I through IV to stream segments, depending on the condition of the stream in each segment. For example:

- Use I stream meets State criteria for water contact recreation and protection of aquatic life;
- Use IP stream meets the same criteria but carries a "P" designation as a potable water supply.
- Use II refers to tidally influenced waters, of which there are none affected by ICC alternatives.
- Use III refers to Natural Trout Waters, carrying the most stringent of water quality criteria.
- Use IV refers to Recreational Trout Waters

Table III-1 lists the subwatersheds crossed by the ICC and their stream Use designations:

Table III-1
ICC Subwatershed Stream Use Designations (from COMAR 26.08.02.08)

Stream	MDE Stream Use Designation at ICC crossing location
Rock Creek	Use IV
North Branch Rock Creek	Use III
Northwest Branch	Use IV
Paint Branch	Use III
Little Paint Branch	Use I
Indian Creek	Use I
Tributaries to Rocky Gorge (above dam)	Use IP
Tributaries to Patuxent River (below dam)	Use I

Two of the subwatersheds crossed by ICC alternatives are considered Montgomery County Special Protection Areas (SPAs). Construction of the ICC would comply with SPA requirements in those subwatersheds where they apply: Upper Rock Creek SPA (above Muncaster Mill Road) and Upper Paint Branch SPA (above Fairland Road). ICC alternatives would cross the Upper Rock Creek SPA in the North Branch Rock Creek subwatershed along Corridors 1 and 2, and the Upper Paint Branch SPA in the Good Hope, Gum Springs, and Paint Branch mainstem subwatersheds along Corridor 1, and Left Fork and Right Fork (of Paint Branch) subwatersheds along Corridor 2. Compliance with SPA requirements means there are additional criteria that must be addressed, beyond MDE requirements, as well as participation in an additional process through Montgomery County Department of Permitting Services (MDPS). In total, the additional scrutiny of the ICC's SWM plans is designed to maximize protection of water resources.

MDE regulations require developers having projects in Maryland to address SWM quality and quantity control on construction sites during and after construction through implementing Best Management Practices (BMPs) in accordance with the *2000 Maryland Stormwater Design Manual* (MDE, 2000). During construction, plans approved by the appropriate authorities must be implemented to address ESC, and after construction is complete, BMPs that address SWM (quality and quantity of stormwater runoff) must be in place and functioning properly, at which time BMP inspection and maintenance programs begin.

During construction of the ICC, state-of-the-art ESC will be provided, including exceeding MDE requirements set forth in the *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control* (MDE, 1994) and redundant ESC measures and BMPs in environmentally sensitive locations. Structural BMPs to be in place during construction would include runoff filters (silt fences, super silt fences, and inlet protection devices), water handling devices (earth dikes, temporary swales, and storm drain diversions), sediment trapping devices (sediment traps and basins), dewatering devices (sump pits, sediment tanks and removable pumping stations), and other BMPs as appropriate. Environmental agencies involved in the project have already voiced concerns about critical stream crossing locations and other places where ESC is paramount.

To address post-construction, long term water quality and quantity control requirements, the project would exceed the minimum requirements set forth in the *2000 Maryland Stormwater Design Manual* by providing water quality treatment for 1.5 inches of rainfall instead of 1.0 inch of rainfall throughout the ICC. The *2000 Maryland Stormwater Design Manual* requires that 1.0 inch of rainfall be treated to address water quality requirements.

In roadway sections, except within SPAs, water quality control would be provided through the use of open swales and grass channel credits as allowed in the *2000 Maryland Stormwater Design Manual*. Roadside ponds would be required in places where channel protection volume (Cpv) and extreme storm (Qp) quantity control requirements prevail. Cpv would be designed for 24-hour detention in Use I and IP subwatersheds. In Use III and IV subwatersheds, Cpv designs would be limited to 12 hours to minimize the potential for increasing receiving stream temperatures.

To address sensitive stream issues within SPAs, a concept of "linear stormwater treatment" has been developed, which would involve widening the ICC median to 50 feet to provide sand filters in the divided roadway median and along roadway shoulders throughout the length of the SPA. Sand filters and collection systems would be designed to maximize infiltration of stormwater, thereby recharging groundwater for the purpose of supplying cool, clean water for stream baseflow. Twelve-hour Cpv is to be provided in pipes underground, again to minimize the potential for solar heating of standing water, and Qp may be provided in surface ponds where necessary. Providing Qp storage typically is not a temperature concern because the storage facilities (ponds) would remain dry except during extreme storm events and would drain relatively quickly, prior to allowing the stored runoff to be heated. The purpose of linear stormwater treatment in SPAs would be to exclude open water ponds that cause reduced tree cover and add heat to stormwater by solar radiation prior to draining to thermally sensitive receiving streams.

The overall approach to water resources protection along the ICC is to provide state-of-the-art stormwater treatment customized to meet individual watershed needs. Highly sensitive streams would be afforded extra protection by design and through rigorous review processes at the local and State levels.

d. Environmental Stewardship

The Build Alternatives would also include an "Environmental Stewardship" component. This would include state-of-the-art efforts focused on restoring, recreating, or enhancing study area features' functions and values from past developments (please refer to the *ICC Environmental Stewardship Technical Memorandum I-270 to US 1* (SHA, 2004) for more details.) Opportunities to restore or enhance natural, cultural, and human resources would include, but not be limited to:

- Water quality improvements
- Stream habitat restoration
- Parkland trails creation and enhancement
- Community enhancement opportunities
- Cultural resource preservation
- Increased acreage of wetlands and forests
- Highway and bridge beautification

3. Corridor 1

Corridor 1 is similar to that which was presented in the March 3, 2004 *ICC, I-270 to US 1, ARDS* report and at the June 2003 Public Workshops (***Appendix A, Volume II, Plates 1 through 40***). Several alignment and interchange options have been considered (including an option to terminate the ICC at I-95 and an option to eliminate the interchange at MD 182). An optional bicycle/pedestrian route has also been considered.

The alignment options, which are similar to those presented at the November 2003 Alternatives Public Workshops, are listed below:

- Rock Creek Option A
- Rock Creek Option C
- Northwest Branch Option A
- Northwest Branch Option B

Interchanges would be provided at the following locations along Corridor 1:

- MD 355
- Shady Grove METRO Access Road/Shady Grove Road
- MD 97
- MD 182 (optional)
- MD 650
- US 29/Briggs Chaney Road
- I-95
- Virginia Manor Road

In addition, the ICC would be designed so as not to preclude the construction of a future interchange with M-83 (a planned easterly extension of Midcounty Highway) and A-59 (a planned road west of I-95).

Corridor 1 would be a new multi-modal facility that provides an opportunity for east-west transit service, including bus service. New express bus routes are currently being evaluated. The bus routes assumed in the travel demand model would serve:

- Shady Grove METRO - Greenbelt METRO
- Shady Grove METRO – Muirkirk and South Laurel MARC
- Columbia – Shady Grove METRO
- Rockville METRO – Muirkirk MARC
- Burtonsville – Greenbelt METRO
- Glenmont METRO – Shady Grove METRO/Shady Grove Adventist Hospital

Revisions and refinements resulting from comments received and studies conducted along Corridor 1 since publication of the DEIS are presented below.

- Stormwater Management (SWM) in park areas - The DEIS showed several SWM areas for the ICC in parks, requiring acquisition of parkland outside the roadway footprint. In order to minimize impacts to parkland, these stormwater facilities will be placed underground, within the roadway footprint of the ICC. However, some areas will be temporarily required outside the roadway footprint to accommodate erosion/sediment control measures during construction. These areas are shown on the engineering plates. After construction, the land for these temporary erosion/sediment control measures will be regraded and re-vegetated prior to being returned to the park owner (see ***Section IV.E.7.d***).
- Pedestrian/Bicycle Route - The DEIS presented a bicycle/pedestrian route plan for the study area, with some segments along the ICC. Corridor 1 included provisions to

accommodate these segments of the trail along the ICC, but not construction of the trail itself. Construction of the trail itself in those segments of the bicycle/pedestrian route plan along the ICC is now included in Corridor 1.

- MD 355 interchange - The configuration of Ramps L and M (northeast quadrant of ICC/MD 355) has been modified to minimize weaving conflicts on the ramps approaching MD 355.
- Overhill Road/Nedham Road Connection to Redland Road - The alignment of the connection associated with Rock Creek Option C – Olde Mill Run Grade Separation has been modified to avoid acquisition of a corner of Rock Creek Regional Park.
- Rock Creek Option C – The horizontal alignment of Rock Creek Option C has been refined from the western edge of Winters Run to east of MD 115 to eliminate two sets of compound curves that, though acceptable by American Association of State Highway Transportation Officials (AASHTO) criteria, were not desirable.
- Gas Lines west of MD 115 – Several transmission gas lines located west of MD 115 would require relocation under Rock Creek Options A or C. The limits of disturbance in this area have been revised to show the land required for these relocations.
- **North Branch Rock Creek Tributary Crossing (Sta. 328, Wetland 1Z) - The DEIS showed a 160-foot long bridge. Based upon comments from USFWS, alternatives were considered, including culverts and other bridge lengths. The result, shown in the FEIS, is a 135-foot long bridge, with removal of the existing oxbow in the stream.**
- ICC at MD 97 – The DEIS showed the ICC over MD 97. Numerous comments from nearby residents have suggested that the ICC go under rather than over MD 97. Initial studies conducted since publication of the DEIS in response to these comments indicate that placing the ICC under rather than over MD 97 would increase the project's cost, primarily due to increased excavation, relocation of utilities, and maintenance of traffic on MD 97 during construction. The configuration shown in this FEIS continues to have the ICC over MD 97; however, the study team continues to evaluate both options and the impact area shown in this document is slightly larger than that shown in the DEIS to accommodate either configuration. More detailed engineering will be needed to make the final determination. SHA is committed to working with the nearby communities in both making this determination and developing appropriate screening and aesthetic treatments.
- MD 28 Grade Separation - The alignment and typical section of MD 28 has been modified not to preclude future proposed MD 28 improvements being considered as part of the SHA's on-going study of MD 28/MD198.
- The east abutment of the easternmost Northwest Branch Bridge on Northwest Branch Option A has been set at approximately Station 601+40 and retaining walls extended to the east to minimize natural environment impacts in the area of the abutment.
- The potential pedestrian/bicycle trail shown in the DEIS between Northwest Branch and Notley Road has been deleted.
- **MD 650 interchange - The configuration of the interchange has been modified to improve turning radii and sightlines, making MD 650 wider. In addition, the proposed cul-de-sac at Cape May Road has been reconfigured to orient the majority of new pavement on the south side of Cape May Road.**

- The bridge at Sta. 673 near the seep east of MD 650 has been replaced with a culvert. It was determined that a culvert would be preferred at this location rather than a bridge since it was a low clearance bridge and the channel under it would have to be rip-rapped. A culvert at this location would be less likely to alter the existing seep drainage/aquifer and potentially provide a more natural drainage channel than a bridge would.
- The alignment and profile between Sta. 680+00 +/- and Sta. 782+00+/- have been shifted to the south and raised to avoid impacts to residences in the Countryside Community. Modifications result in less than 0.1 acres of increased wetland 2HH, avoid impacts to stream 2FF, provide a higher bridge over both Gum Spring and Paint Branch, require higher and longer retaining wall s at the east abutment of the Gum Spring/Paint Branch bridge, lower and shorter length retaining walls east of the bridge, and maintain the same high points and low points for drainage as the current design. No change in the Limit of Disturbance is required.
- Interchange at Old Columbia Pike - The DEIS included two ramps at Old Columbia Pike to provide access to/from the west. These ramps have been dropped from Corridor 1, eliminating several residential displacements along Sherview Lane. These ramps would have provided local road access to the community. However the communities and several resource agencies expressed a preference for dropping the ramps and accepting a less direct connection to the ICC through use of the existing road network.
- US 29 park-and-ride lot – The FEIS no longer includes the identification of a future park-and -ride lot in the southwest quadrant of the ICC Corridor 1 / US 29 interchange. The elimination of the ramps at Old Columbia Pike as shown in the DEIS, as well as no direct access provided from the ICC to Fairland Road, severely impacted access to the potential park-and-ride lot, thus making it no longer feasible.
- I-95/ICC interchange area - The alignment has been refined to accommodate the shift in ICC east of I-95 (described below), as well as to address the latest traffic modeling needs. One of the more significant refinements was the addition of a Southbound I-95 auxiliary lane, between the MD 198/Contee Road on ramp (Sta. 811) and the Southbound off-ramp at MD 212 (Sta. 710).
- ICC alignment east of I-95 - The alignment has been shifted approximately 750 feet to the south to reduce impacts to wetlands and a rare plant species. Corridor 1 would still intersect US 1 at approximately the same location as shown in the DEIS.
- Maintenance Facilities - In order to properly operate and maintain the ICC, two maintenance facilities would be needed. These facilities were not shown in the DEIS but are shown in this FEIS. The western facility would be located at the intersection of Shady Grove Road/Crabbs Branch Way and the eastern facility north of the ICC between Virginia Manor Road and US 1, with access provided from the ICC/Virginia Manor Road interchange. Please refer to ***Section III.E.5*** for additional information regarding maintenance facilities.

Several other studies were completed following publication of the DEIS in response to comments received from agencies and the public, but did not result in significant modifications of Corridor 1. Such studies included:

- Overhill Road (Rock Creek Option C – Olde Mill Run Cul-de-Sac Option): The DEIS showed the ICC crossing over Overhill Road. A study was performed to examine lowering the ICC to pass under Overhill Road; however, such an arrangement would produce no change in residential or business displacements, would make access from Overhill Road to existing residences and businesses more difficult, and would increase cost by approximately $4,700,000. Therefore, the profile as shown in the DEIS was retained.
- US 29: The DEIS showed a three level interchange at US 29. In response to comments from the Corps of Engineers regarding the visual impact of the interchange to the communities of Tanglewood and Avonshire, studies were conducted to evaluate the feasibility of a two level interchange at this location. Multiple options were developed, but each potential solution was found to have negative issues (substandard geometry, unacceptable level of operations, additional right of way impacts) that outweighed the potential visual benefits. Although the three level interchange remains as the design included in the FEIS, the SHA is committed to minimizing the visual impact through the construction of berms/screening at the Tanglewood community, as well as the preservation of wooded acreage on SHA land near the Avonshire community.

Features of Corridor 1 are described in detail below and shown in ***Appendix A, Plates 1 - 40***.

a. Alignment, Options, and Interchanges

Corridor 1 would begin with the widening of existing I-370 from four to six lanes from approximately 500 feet west of MD 355 (where the improvements would connect to roadway widening planned as part of an I-270 study) to the vicinity of Crabbs Branch Way.

The existing ramp from northbound I-370 to northbound MD 355 would be modified to serve both northbound and southbound traffic. Due to the modification of this ramp and the widening of I-370 in this area, some reconstruction of the existing ramps on the north side of MD 355 would also be included. At the Shady Grove METRO Access Road, existing I-370 would be reconstructed, and ramps provided between the Access Road and I-370 to the west and ICC to the east. Modifications would be made at the Access Road ramps at Shady Grove Road.

From Crabbs Branch Way, Corridor 1 would deviate from I-370, extending to the northeast and passing between the Mill Creek South and Redland Station subdivisions. Approximately 500 feet south of Epsilon Drive, Corridor 1 would pass over Shady Grove Road. Continuing in an easterly direction, the alternative would pass beneath Redland Road approximately 900 feet south of Nedham Road, on the north side of the Shady Grove Presbyterian Church.

From the west side of Redland Road to the east side of MD 115, there are two alignment options: Rock Creek Option A and Rock Creek Option C.

Rock Creek Option A (***Appendix A, Plates 3, 4 and 5***) would include the reconstruction of approximately 900 linear feet of Redland Road. East of Nedham Road, Rock Creek Option A would curve to the southeast through Rock Creek Regional Park to a crossing of Needwood Road approximately 2,100 feet southwest of MD 115. Rock Creek Option A would pass over

Needwood Road, requiring reconstruction of approximately 1,500 linear feet of Needwood Road. This option would continue in a southeasterly direction and pass beneath MD 115 approximately 800 feet north of Avery Park Drive, requiring the reconstruction of approximately 1,400 linear feet of MD 115.

Rock Creek Option C (***Appendix A, Plates 6 through 11***) would curve to the northeast starting just west of Redland Road, passing through the Cashell Estates subdivision. This option would then curve to the east and pass through the Winters Run subdivision between Heatherford Court/Pilgrims Cove and Farmingdale Court, utilizing the area reserved for M-83 (Midcounty Highway). M-83 is the designation in Montgomery County's master plan for the extension of Midcounty Highway, which currently has its eastern terminus at Shady Grove Road. The Upper Rock Creek Master Plan shows two options for connecting M-83 to the ICC, which essentially follows Rock Creek Option A in the master plan. M-83 Alternate A follows Rock Creek Option C through Winters Run and connects to the ICC near MD 115. M-83 Alternate B swings southeast from the M-83 crossing of Redland Road, passes through Cashell Estates, and connects to the ICC in Rock Creek Park southwest of the Winters Run subdivision. Although an M-83 connection is not part of this ICC project, the ICC has been preliminarily designed so as not to preclude an interchange that accommodates movements from eastbound M-83 to eastbound ICC and from westbound ICC to westbound M-83. For Rock Creek Option A, the potential future interchange would depend on the alignment selected for M-83. Measures to accommodate this possible future interchange include grading the ICC roadway and constructing a longer bridge for MD 115 over the ICC to accommodate potential future acceleration/deceleration lanes. It should be noted that any future construction of M-83 would require widening the ICC Rock Creek Option A bridge over Rock Creek and constructing the auxiliary lanes. M-83 would connect to Rock Creek Option C on the west side of the Winters Run subdivision. Although the ROW lines and the retaining walls through most of Winters Run have been set to accommodate potential future acceleration/deceleration lanes for M-83, some reconstruction as well as additional ROW and residential displacements would be required on the south side of Rock Creek Option C at the western end of Winters Run.

Two vertical alignment options are being considered for Rock Creek Option C at its crossing of Olde Mill Run, the entrance road from MD 115 to Winters Run:

- The Olde Mill Run Grade Separation Option would place the ICC in a cut, with a bridge to carry Olde Mill Run over the ICC, and retaining walls along both sides of the ICC. The bridge could range in width from approximately 60 feet (needed to carry Olde Mill Run and sidewalks over the ICC) to 700 feet (which would provide a potential park-type area over the ICC on both sides of Olde Mill Run).
- The Olde Mill Run Cul-de-Sac Option would have the ICC cross Olde Mill Run near its existing grade, with a cul-de-sac on both sides of the ICC. Under this scenario, the residences in Winters Run south of the ICC would utilize an extension of Garrett Road and reconstructed Overhill Road to access Redland Road.

East of Winters Run, Rock Creek Option C would curve to the southeast and pass beneath Needwood Road approximately 1,000 feet south of MD 115, requiring reconstruction of

approximately 700 linear feet of Needwood Road. It would then cross under MD 115 at essentially the same location as Rock Creek Option A.

Continuing in an easterly direction, Corridor 1 would pass through the North Branch Stream Valley Park and south of the Oakdale subdivision to a crossing of Emory Lane, approximately 800 feet northeast of Pinetree Road. Approximately 1,400 linear feet of Emory Lane would be reconstructed and raised as much as seven feet, to permit Corridor 1 to pass beneath.

Continuing southeasterly between the Brooke Manor subdivision on the north and the Sycamore Acres/Preserve subdivisions on the south, Corridor 1 would cross over MD 97 approximately 0.6 mile north of MD 28. (As described in ***Section III-E.3*** above, placing the ICC under MD 97 is also being considered.) At MD 97 (***Appendix A, Plate 14***), a partial cloverleaf interchange is proposed, with loop ramps and diamond-type ramps in the northwest and southeast quadrants, and directional ramps in the northeast and southwest quadrants. Two new signalized intersections would be introduced on MD 97.

Existing MD 97 has four through lanes in the vicinity of Corridor 1, while the Olney Master Plan indicates an ultimate six-lane roadway. Under Corridor 1, one through-lane would be added in each direction from MD 28 through the ICC interchange to the vicinity of Batchellor's Forest Road. Additional auxiliary turn lanes would also be provided. The existing service road on the west side of MD 97 north of MD 28 that provides access to the Preserve would be extended to intersect MD 97 at the new signalized intersection on the south side of the ICC. Continuing in a southeasterly direction, the alternative would cross beneath MD 28 just west of Wintergate Drive. MD 28 would be reconstructed for approximately 2,400 linear feet, with its grade being raised approximately six feet at the Corridor 1 crossing.

Between MD 28 and MD 182 (***Appendix A, Plates 15 through 17***), Corridor 1 would pass through the Longmead community. Although a 300-foot wide reservation for a highway exists in this area, residences and community facilities abut Corridor 1 on both sides. Corridor 1 would be generally lower than existing ground through Longmead and would pass beneath Longmead Crossing Drive, an existing road connecting the two sides of the development. Retaining walls would be provided, if necessary, to avoid grading outside the reservation area.

Corridor 1 includes an interchange at MD 182 (Layhill Road). As an option, the study team has also considered building Corridor 1 without the MD 182 interchange (***Appendix A, Plates 17 and 18***). MD 182 is a north south oriented roadway that serves the communities in the center of the study area. It connects MD 97 (Georgia Avenue) near the Glenmont Metro Station and MD 108 through the center of the study area. It is a four-lane road between MD 97 and Bel Pre Road, and a two-lane road for the remainder. If an interchange with the ICC were not provided, local motorists would need to travel a substantial distance to access the ICC via either the MD 97 (Georgia Avenue) or MD 650 (New Hampshire Avenue) interchanges. This additional travel would be made along some of the east-west local roadways and associated intersections that would have the greatest amount of traffic reduction afforded by the ICC. Therefore, as a result of the technical studies performed as part of this study, the study team has concluded that providing the MD 182 interchange, with both Build Alternatives, is needed to provide safe and efficient traffic operations and to greatly enhance community mobility and safety.

East of MD 182, from approximately 800 feet south of Park Vista Drive to west of Notley Road, the alternative would cross Layhill Local Park, Northwest Branch Recreational Park, and Northwest Branch Stream Valley Park - Unit 5. Two alignment options have been considered this area: Northwest Branch Option A (which has been developed to reduce floodplain impacts) and Northwest Branch Option B (which follows the ICC alignment shown on Montgomery County's master plan). Both of these options would begin at the proposed interchange at MD 182.

Under Northwest Branch Option A (***Appendix A, Plates 17 through 20***), the alternative would continue southeast from MD 182 through Layhill Local Park and Northwest Branch Recreational Park and cross over Bonifant Road in the vicinity of the National Capital Trolley Museum. The alternative would then enter Northwest Branch Stream Valley Park - Unit 5, pass just to the east of the Audubon Woods community, and then curve to the northeast, passing between the South Stonegate and Sherwood Forest subdivisions. Between MD 182 and Notley Road, Northwest Branch Option A would cross Northwest Branch at three locations.

Under Northwest Branch Option B (***Appendix A, Plates 21 through 24***), the alternative would cross Bonifant Road approximately 600 feet west of the National Capital Trolley Museum, pass just east of the Audubon Woods community, and then curve to the northeast, passing between the South Stonegate and Sherwood Forest subdivisions. Between MD 182 and Notley Road, Northwest Branch Option B would cross Northwest Branch at three locations.

Corridor 1 would then pass under Notley Road, approximately 500 linear feet of which would be reconstructed with no substantive change in alignment. Continuing in an easterly direction, Corridor 1 would pass north of the Colesville Manor subdivision, and then cross under MD 650 approximately 400 feet south of Cape May Road. An urban diamond-type interchange, with a signalized intersection, is proposed at MD 650 for Corridor 1. MD 650 would remain at its existing horizontal and vertical alignment, with a bridge carrying it over the proposed ICC. The existing six through-lanes would be carried on MD 650 through the interchange, with auxiliary turn lanes added. Due to proximity of the proposed interchange on MD 650 with Cape May Road, the closing of Cape May Road at MD 650 would also be part of this alternative.

From MD 650, Corridor 1 would proceed in an easterly, then southeasterly direction toward Paint Branch, passing south of Dr. Charles R. Drew Elementary School and the Spring Oaks Estates and Gum Springs Farm subdivisions. The alternative would generally follow a reserved highway corridor through the Upper Paint Branch Stream Valley Park. After crossing Paint Branch, Corridor 1 would pass between the Countryside and Hardings subdivisions to a crossing under Old Columbia Pike approximately 1,300 feet north of Fairland Road. Continuing in a southeasterly direction, Corridor 1 would cross US 29, where an interchange would be provided, approximately 0.4 mile south of Briggs Chaney Road.

A full interchange with multiple semi-directional ramps is proposed at US 29 (***Appendix A, Plates 28 through 30***). (A semi-directional ramp is one used to exit a road in a direction opposite from the desired direction of travel, but then used to turn toward the desired direction of travel; a directional ramp is one used to exit a road in the desired direction of travel.) The interchange would be designed to accommodate all movements to and from the proposed ICC