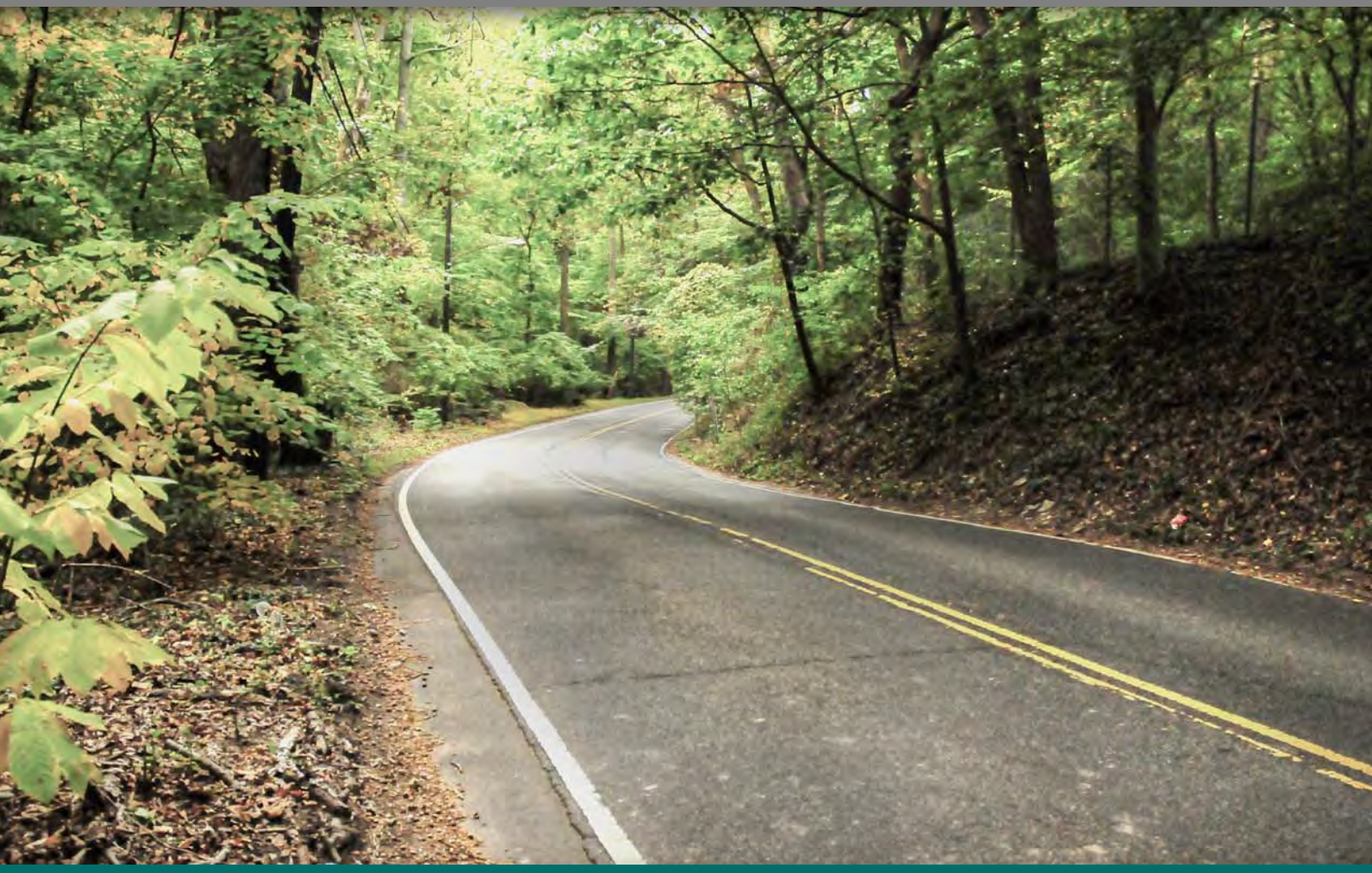
REHABILITATION OF
BROAD BRANCH ROAD, NW
WASHINGTON, DC

October 2013

ENVIRONMENTAL ASSESSMENT
SECTION 4(f) EVALUATION



d.
District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

ENVIRONMENTAL ASSESSMENT
AND SECTION 4(f) EVALUATION
FOR THE
REHABILITATION OF BROAD BRANCH ROAD, NW
WASHINGTON, DC

Prepared pursuant to 42 U.S.C. 4332(2)(c) by:
U.S. Department of Transportation
Federal Highway Administration
and
District Department of Transportation

In Cooperation with
National Park Service

Oct. 9, 2013
Date of Approval

Terry Bellamy
Director
District Department of Transportation

Oct. 9, 2013
Date of Approval

Joseph C. Lawson
Division Administrator
Federal Highway Administration
District of Columbia Division

SUMMARY

S.1 PREFACE

The Federal Highway Administration (FHWA) in conjunction with the District Department of Transportation (DDOT)and in cooperation with the National Park Service (NPS), are proposing the rehabilitation of the 1.5-mile segment of Broad Branch Road, NW, between Linnean Avenue, NW and Beach Drive, NW, a portion of which abuts the southwestern border of Rock Creek Park. This Environmental Assessment (EA) and Section 4(f) Evaluation has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508), FHWA's *Environmental Impact and Related Procedures* (23 CFR 771), FHWA's *Technical Advisory Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (T6640.8A), DDOT's *Environmental Policy and Process Manual*, and NPS Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*. The project also includes the evaluation of potential effects to cultural resources in accordance with Section 106 of the National Historic Preservation Act (NHPA).

S.2 PURPOSE AND NEED

The purpose of the proposed action is to rehabilitate Broad Branch Road to satisfy operational and safety needs in a manner keeping with the setting of the project area. Context sensitive solutions will take into account the adjoining land uses including residential, foreign diplomatic properties, institutional developments and wooded areas, including Rock Creek Park. Improvements to the corridor will consider all modes of transportation including motorized vehicles, bicycles, and pedestrians.

The needs for improvements to Broad Branch Road relate primarily to deficiencies in the existing roadway infrastructure and stormwater management system; the safety of motorists, pedestrians, and bicyclists; and linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems (i.e., Rock Creek Trail, Western Ridge Trail, and Soapstone Valley Trail).

S.3 PROJECT BACKGROUND

The rehabilitation of Broad Branch Road was originally placed on DDOT's schedule of planned improvements because of the apparent needs for roadway repair and the desire for a safer facility. The roadway is unsafe because of drainage issues, as well as poor lighting and the tendency for drivers to exceed the posted speed limit.

The uncontrolled runoff from elevated parcels to the north and west of the roadway has contributed in large part to the deterioration of this two-lane roadway. The large volume of

stormwater has also had detrimental effects on the adjacent streambeds in Broad Branch and Soapstone Creek. Extensive erosion at outfalls as well as at streambeds of the receiving waterways has been attributed to the high, erosive powers of the stormwater. The need for a total solution involving improvements on National Park properties has resulted in the NPS serving as a Cooperating Agency in the development of the EA.

Aging infrastructure has contributed to the deficiencies in the roadway corridor. The culvert carrying Broad Branch Road over Soapstone Creek has been temporarily repaired after partial collapse and requires permanent replacement. Replacement of this culvert will be addressed as a part of the upgrades planned for Broad Branch Road.

The District Department of the Environment (DDOE) is currently working with the NPS in conducting a stream restoration "daylighting" project to an unnamed tributary of Broad Branch in the northern end of the project corridor (DDOE and NPS, 2012).

S.4 ALTERNATIVES

While the main purpose of the project is to reconstruct Broad Branch Road and control stormwater runoff, other elements are also being studied for inclusion within the roadway cross-section, including bicycle and pedestrian facilities. With regard to the latter, recent DC legislation has prompted the need for pedestrian accommodations within the corridor. Furnishing sidewalks along Broad Branch Road would also conform to the District's Complete Street Program, a policy document that encourages the provision of sidewalks along DC streets.

Alternatives development consisted of a multi-step collaborative process with the study team, stakeholders, and the public to develop a range of alternatives that incorporate elements to address each of the project's needs: roadway elements, stormwater and drainage elements, and bicyclist and pedestrian elements. The No Action Alternative, three Candidate Build Alternatives, and three options to complement the proposed improvements in the roadway corridor are analyzed in detail in this EA.

S.4.1 ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative (Alternative 1), the improvements to Broad Branch Road would include short-term minor restoration activities (safety and routine maintenance) that maintain the continuing operation of the existing roadway.

The existing roadway is located within DDOT right-of-way, with minor exceptions. These exceptions occur in six short sections along the project corridor where the existing roadway was constructed outside DDOT-owned property. These small areas account to a total area of 923 square feet. All but one location are located on the east side of the roadway where the northbound lane encroaches on NPS-owned property in Rock Creek Park (see Figure B-2 in Appendix B). The single encroachment on the west side of the roadway occurs where a curve in the southbound lane enters private property owned by a Sovereign Nation (the Republic of Peru). The location of the roadway, outside of the DDOT-owned right-of-way, may be due to inconsistencies in survey bounds that existed when the current Broad Branch Road was constructed or may be the result of previous repaving projects. This EA will serve to provide the

appropriate action needed to correct these inconsistencies, which may include an easement, land transfer, or permit.

While the No Action Alternative does not meet the purpose and need of the project, it provides a basis for comparing the environmental consequences of the Candidate Build Alternatives.

S.4.2 CANDIDATE BUILD ALTERNATIVES

The three Candidate Build Alternatives will address deficiencies in the existing roadway infrastructure and stormwater management systems; improve the safety of motorists, pedestrians, and bicyclists; and enhance linkages with respect to serving pedestrian and bicycle travel. Each of the Candidate Build Alternatives involves a minor westward shift in the existing roadway alignment to avoid or minimize impacts to Broad Branch stream and Rock Creek Park. For any alternative, prior to any land disturbance activities, tree protection measures, protective fencing, and other best management practices (BMPs) would be installed. The existing roadway infrastructure within the project area would be removed including pavement, curb and gutter, inadequate stormwater drainage systems, as well as debris and trees that present a hazard. DDOT would include in the contractor specifications that all removed materials be disposed of or recycled in accordance with the DDOT *Standard Specifications for Highways and Structures* (2009e). Additional measures for the protection of cultural resources (e.g., historic retaining walls, culvert headwalls, stone boundary markers along the park boundary) will also be incorporated in the contractor specifications.

All Candidate Build Alternatives would be designed to accommodate widths and weights of utility maintenance vehicles and emergency response vehicles. Grading and placement of clean fill would be necessary to prepare a stable bed for the roadway and to provide adequate drainage conveyance. Existing profile elevations would be raised or lowered in steeper areas to minimize blind crests and improve sight distances along the roadway.

Stormwater management would be accomplished through a closed, underground system, which would collect and treat the runoff and direct it to the 21 existing outfall locations along the east side of the corridor. Inadequate stormwater inlets and culverts would be reconstructed and resized to appropriately convey water. In addition, existing culverts may need to be extended to accommodate a wider corridor with additional roadway elements under some alternatives. Replacement of stormwater pipes will require work at outfalls exiting through headwalls or retaining walls. Several of the outfalls occur on NPS property and many are contributing resources to the Rock Creek Park Historic District. Work associated with these outfalls will be coordinated with the NPS. If work is to be performed by DDOT it will require a temporary construction easement. In addition, a new culvert is proposed for the roadway over Soapstone Creek toward the southern end of the project area. The emergency replacement of Soapstone Creek Culvert was performed as a separate action independent of the Candidate Build Alternatives addressed in this EA; however, design plans for the permanent replacement structure for the culvert are analyzed in this EA.

Both travel lanes of the roadway will be paved with a normal cross slope so that all roadway runoff would be directed to the curb and gutter on each side of the roadway. Bio-swales/rain gardens will be provided in each alternative along with water quality catch basins.

Coping and retaining walls would be incorporated where feasible to minimize the limits of disturbance and footprint of the roadway. Retaining walls would be designed with context sensitive materials to complement the setting of Rock Creek Park and the surrounding area as well as incorporate construction methods to minimize intrusion into the Rock Creek Park properties. Because the majority of walls proposed on the east side of the roadway would be constructed within several feet of or partially overlapping the footprint of existing stone walls that are contributing resources to the Rock Creek Park Historic District, analysis of existing wall conditions, designs to restore and stabilize or replace existing walls, and construction methods would be developed in close coordination with NPS.

Following construction, additional restoration along Broad Branch Road would include replanting of native tree species and vegetation including restoration of landscaped areas in front of adjacent property owners on the west side of the road with commensurate landscaping. Species would be selected in consideration of the natural and cultural landscapes, as well as the aesthetics of Rock Creek Park and residential and institutional areas.

Where feasible, sidewalk treatments will be in keeping with the context of the project setting. Treatments include trail-like designs or the use of colored concrete or pavers. The selection of treatment types will take place during final design.

All three Candidate Build Alternatives would be properly signed and marked in accordance with standards of the American Association of State Highway and Transportation Officials (AASHTO), DDOT, and the *Manual on Uniform Traffic Control Devices* (MUTCD). Features such as signage and lighting would be incorporated into more detailed design plans.

CANDIDATE BUILD ALTERNATIVE 2

Candidate Build Alternative 2 is the minimum width alternative that meets the purpose and need of the project. It consists of two 10-foot travel lanes with standard curb and gutter on the east side with either a standard curb and gutter or a linear rain garden (bio-swale) to capture stormwater runoff on the west side. The 10-foot-wide linear rain garden will be provided for approximately 1,000 feet southward of Linnean Avenue. This alternative has a cross-section width ranging from approximately 23 to 37 feet. This alternative allows all elements of the reconstructed roadway to be located within the existing DDOT right-of-way, with minor exceptions where the existing roadway extends outside of the existing right-of-way, described in S.4.1. Notwithstanding these exceptions, there are no physical components proposed under Candidate Build Alternative 2 which would require acquisition of additional right-of-way from the NPS or from private property. Areas requiring cut-and-fill activities outside the existing right-of-way are limited to nine discrete locations totaling 249 square feet (91 square feet on the east side and 157 on the west side) and would be accomplished through temporary construction easements.

The intersection of Broad Branch Road and 27th Street will be modified under Candidate Build Alternative 2 to improve turning movements. Alternative 2 retains the existing Y-configuration at the intersection of Broad Branch Road and Brandywine Street with minor changes to the width of traffic lanes on Brandywine Street.

Some segments of the roadway will require new or replacement retaining walls (or coping walls) to minimize cut-and-fill areas and to limit improvements to the DDOT-owned right-of-way. On the east side of the roadway along the banks of Broad Branch, nine segments of retaining walls totaling over 1,750 feet in length, are required. The walls are designed to extend 3.5 feet above the top of the curb, as viewed from within the roadway, to meet DDOT safety standards. To meet these standards and accommodate the steep slope along the edge of the roadway, the total wall height ranges from 8 to almost 15 feet. Much of this height will occur below ground surface so the portion of the wall visible from the stream side will be limited to 4.5 to 6.5 feet high. The 12 retaining walls on the west side of the roadway will range from 3 to 7 feet above the top of the curb and total nearly 2,600 feet in length. Slope stability analysis will be conducted during final design to confirm the requirement for walls on the west side; walls may be eliminated or reduced in height based on this analysis. Because the majority of walls proposed on the east side of the roadway would be located within several feet of or partially overlapping the footprint of existing stone walls that are contributing resources to the Rock Creek Park Historic District, analysis of existing wall conditions, designs to restore and stabilize or replace existing walls, and construction methods would be developed in close coordination with NPS.

A major component of the stormwater management systems improvements to be accomplished in the rehabilitation of Broad Branch Road includes replacement of the Soapstone Creek Culvert. The existing Soapstone Creek Culvert, a six-foot wide, stone arch culvert constructed in 1898, would be replaced with a 16 feet by 9 feet high precast concrete arch culvert with an opening 16 feet wide by 4 feet high. The proposed structure would resemble the existing historic culvert in form and visible materials to the maximum extent possible. Finalization of form, patterns, materials, and color will be determined in consultation with the NPS cultural resources specialist during final design.

The total estimated project cost for Alternative 2 is $29.0 million. The approximate construction duration is 24 months.

Option A. Expanded Retaining Wall. Option A for Candidate Build Alternative 2 includes an expanded retaining wall along the west side of the roadway in an area bordering residential development. This option increases the length of the retaining wall from approximately 70 feet to approximately 560 feet. The longer wall segment will reduce the amount of cut for roadway side slopes required for rehabilitation of the roadway within the existing right-of-way. The shorter (70 foot) retaining wall meets the requirement to maintain the existing right-of-way but would require additional cut for side slopes, increasing the potential for erosion in this area.

Option B. Sidewalk. An optional 6-foot wide sidewalk with a retaining wall can be provided on the west side of Broad Branch Road from Soapstone Creek to the parking lot entrance just

north of Beach Drive. This option improves linkages between park facilities along the roadway. Portions of the proposed wall and sidewalk occur on property west and south of DDOT right-of-way on privately owned and NPS-owned property. Construction of the sidewalk and wall would be accomplished through a combination of right-of-way acquisition on private property and temporary easements on NPS property.

Option C. T-Intersection at Brandywine Street. A new T-intersection is proposed at Brandywine Street to replace the existing forked Y-intersection. The reconfiguration of this intersection is being proposed to reduce the paved area and incorporate additional Low Impact Development (LID) techniques in the roadway design with rain gardens in the interior corners of the new intersection. The reconfigured intersection will also improve roadway safety by minimizing crash risk for northbound drivers on Broad Branch Road turning left onto Brandywine Street. Requiring drivers to stop at a stop sign at the T-intersection, instead of yielding as with the existing Y-intersection, will also reduce speeds at the intersection.

CANDIDATE BUILD ALTERNATIVE 3

Candidate Build Alternative 3 consists of two 10-foot travel lanes, a 6-foot wide sidewalk on the west side of the roadway for the entire length, and standard curb and gutter. A 10-foot-wide linear rain garden will be provided for approximately 1,000 feet southward of Linnean Avenue where the curb and gutter will be located only along the east side of the roadway. South of that, a 4-foot wide planting strip will separate the sidewalk and roadway for the length of the project and the curb and gutter will be located on both sides. Candidate Build Alternative 3 extends the proposed sidewalk from the end of the DDOT right-of-way into a 6-foot wide sidewalk that reaches the Rock Creek Park parking lot entrance just north of Beach Drive.

This alternative has a cross-section width ranging from approximately 33 to 43 feet from curb to outer edge of sidewalk. In addition to the areas where the current roadway exceeds existing right-of-way as noted in Section S.4.1, new right-of-way will be required on the west side along narrow portions of the roadway to accommodate the new sidewalk. Limited new right-of-way, approximately 39 square feet, may be required along the east side of the roadway on NPS land to accommodate the construction of proposed new retaining walls, pending completion of engineering studies to assess the condition of existing walls. In addition to the potential for right-of-way acquisition, narrow areas proposed for grading (fill) occur along the right-of way, the largest of which is approximately 2 feet wide by 50 feet long, at the southern end of the project area south of Ridge Road (Station 91+00) Any grading outside the existing DDOT right-of-way will require a temporary construction easement.

The intersection of Broad Branch Road and 27th Street will be modified to split the right and left turn lanes for southbound motorists on Broad Branch Road, allowing for improved turning movements at the intersection. The existing Y-configuration at the intersection of Broad Branch Road and Brandywine Street would be retained under Alternative 3 with minor changes to the width of traffic lanes on Brandywine Street and the addition of a sidewalk across the east end of the traffic island. Crosswalks would be added to facilitate pedestrian access to and use of the new sidewalk on the western side of the road.

Some sections of roadway will require retaining walls (or coping walls) to minimize right-of-way requirements and stabilize slopes. On the east side of the roadway along the banks of Broad Branch, 13 segments of retaining walls, totaling over 1.700 feet, are required. Like Alternative 2, the walls are designed to extend 3.5 feet above the top of the curb, as viewed from within the roadway, to meet DDOT safety standards. The total wall height ranges from 8 to 16 feet due to the slope down to Broad Branch. Much of this height will occur below ground surface so the portion of the wall visible from the stream side will be limited to 4.5 to 6.5 feet high. . The 16 retaining walls on the west side of the roadway will range from 3 to 13 feet high and total over 4,500 feet in length. Final wall heights will be determined during final design based on soil stability analysis. Walls may be eliminated or reduced in height based on this analysis. Because the majority of walls proposed on the east side of the roadway would be constructed within several feet of or partially overlapping the footprint of existing stone walls that are contributing resources to the Rock Creek Park Historic District, analysis of existing wall conditions, designs to restore and stabilize or replace existing walls, and construction methods would be developed in close coordination with NPS.

Like Candidate Build Alternative 2, Candidate Build Alternative 3 includes replacement of the Soapstone Creek Culvert. The replacement of the Soapstone Creek culvert will be the same in form, pattern, materials, and color as identified for Candidate Build Alternative 2; however, the structure will be slightly wider over Soapstone Creek than Alternative 2 to accommodate the 6-foot sidewalk on the west side of Broad Branch Road.

The total estimated project cost for Alternative 3 is $34.2 million. The approximate construction duration is 30 months.

Option C. T-Intersection at Brandywine Street. A new T-intersection is proposed at Brandywine Street to replace the existing forked Y-intersection. The intersection design is very similar to that described in Option C under Candidate Build Alternative 2 with the addition of sidewalks on both sides of Brandywine Street to connect to the sidewalks proposed for the western side of Broad Branch Road. The design also includes wheelchair accessible ramps/aprons, and a crosswalk.

CANDIDATE BUILD ALTERNATIVE 4

Candidate Build Alternative 4 is the widest of the project alternatives and consists of two 10-foot travel lanes, a 6-foot wide sidewalk on the west side, a 4-foot wide bike lane on east side, and standard curb and gutter. A 10-foot-wide linear rain garden will be provided for approximately 1,000 feet southward of Linnean Avenue where the curb and gutter will be located only along the east side of the roadway. South of that, a 4-foot wide planting strip will separate the sidewalk and roadway for the length of the project and the curb and gutter will be located on both sides. Candidate Build Alternative 4 extends the proposed sidewalk from the end of the DDOT right-of-way into a 6-foot wide sidewalk that reaches the Rock Creek Park parking lot entrance just north of Beach Drive.

This alternative has a cross-section width ranging from approximately 37 to 47 feet from curb to outer edge of sidewalk. In addition to the areas where the current roadway exceeds existing

right-of-way as noted in Section S.4.1, new right-of-way will be required on both sides of the roadway to accommodate the sidewalk and planting strip on the west side and retaining walls on the east side. Like Alternative 3, Alternative 4, may also require additional right-of-way, approximately 2,200 square feet, along the east side of the roadway on NPS land to accommodate the construction of proposed new retaining walls (pending engineering studies to assess the condition of existing walls). Areas proposed for grading (fill) occur along both the east and west sides of the right-of way. Any grading outside the existing DDOT right-of-way will require a temporary construction easement.

Like Alternative 4, the Broad Branch Road intersection with 27th Street will be modified to split the right and left turn lanes for southbound motorists on Broad Branch Road, allowing for improved turning movements at the intersection. The intersection will also be wider to accommodate the northbound bike lane. The existing Y-configuration at the intersection of Broad Branch Road and Brandywine Street would be retained under Alternative 4 with minor changes to the width of traffic lanes on Brandywine Street and the addition of a sidewalk across the east end of the traffic island. Crosswalks would be added to facilitate pedestrian access to and use of the new sidewalk on the western side of the road.

Some sections of roadway will require retaining walls in order to minimize right-of-way requirements and stabilize slopes. On the east side of the roadway along the banks of Broad Branch, 21 segments of retaining walls, totaling over 2,300 feet in length, are required. Like Alternatives 2 and 3, the walls are designed to extend 3.5 feet above the top of the curb, as viewed from within the roadway, to meet DDOT safety standards. The total wall height ranges from 3 to 17 feet. Much of this height will occur below ground surface so the portion of the wall visible from the stream side will be limited to 4.5 to 6.5 feet high. The 16 retaining walls on the west side of the roadway range from 3 to 16 feet high and total nearly 4,700 feet in length. Soil stability analysis to be conducted during final design will confirm requirements for the walls; walls may be decreased in height or eliminated based on the results of studies. Because the majority of walls proposed on the east side of the roadway would be constructed within several feet of or partially overlapping the footprint of existing stone walls that are contributing resources to the Rock Creek Park Historic District, analysis of existing wall conditions, designs to restore and stabilize or replace existing walls, and construction methods would be developed in close coordination with NPS.

Like Candidate Build Alternatives 2 and 3, Candidate Build Alternative 4 includes replacement of the Soapstone Creek Culvert. The replacement of the Soapstone Creek culvert will be the same in form, pattern, materials, and color as identified for Candidate Build Alternatives 2 and 3; however, the structure will be slightly wider over Soapstone Creek in order to accommodate the bike lane.

The total estimated project cost for Alternative 4 is $37.1 million. The approximate construction duration for is 36 months.

Option C. T-Intersection at Brandywine Street. A new T-intersection is proposed at Brandywine Street to replace the existing forked Y-intersection. The intersection design is very

similar to that described in Option C for Candidate Build Alternative 3. Proposed sidewalks on both sides of Brandywine Street in this alternative would connect to the sidewalks proposed for the western side of Broad Branch Road in Candidate Build Alternative 4. The design also includes wheelchair accessible ramps/aprons, and a crosswalk.

S.5 AFFECTED ENVIRONMENT

Existing environmental conditions were identified and mapped within the project corridor, including natural, cultural, and socioeconomic, including community, resources (see **Figure S-1** and **Figure S-2**). In addition, the existing conditions in the Broad Branch project corridor were assessed in terms of the condition of the transportation network, air quality, noise and vibration, hazardous waste and materials, and energy conservation.

Key natural resources within the project corridor include Broad Branch, a perennial stream with a mapped 100-year floodplain, and Rock Creek Park, the only large area of mostly contiguous deciduous forest habitat in the District metropolitan area. Several tributaries to Broad Branch are also crossed by the alignment, including Soapstone Creek.

A tree survey was conducted as part of this project to determine the number, size, and health (condition) of existing trees along the roadway corridor. The inventory was used to determine the potential impact (direct and indirect) to trees adjacent to the roadway and will help determine the level of replacement required to mitigate any loss.

In terms of cultural resources, archeological sites, areas of archeological potential, historic structures and cultural landscapes are located in the Broad Branch Road project area. The Rock Creek Park Historic District (RCPHD) and the Civil War Fort Sites and Fort Circle Park System Historic District are listed on the National Register of Historic Places (NRHP) and are immediately adjacent to Broad Branch Road. Contributing elements to the two historic districts are located within the Area of Potential Effects (APE) for the proposed project. These elements include one archaeological site (site 51NW169) for the Civil War Fort Sites and Fort Circle Park System Historic District; and a roadway bridge, two roads, a historic trail, a culvert, stormwater outfalls with stone headwalls, stone retaining walls, and stone boundary markers for the RCPHD. Other architectural resources identified in the DDOT right-of way within the APE include a stone pedestrian bridge and architectural features associated with DC roadway and infrastructure which include Broad Branch Road, 27th Street, the 27th Street Bridge, roadway guard rails, and water control resources such as storm drain outfalls and inlets, retaining walls, culverts, stone channels, and circular features. Residential and institutional facilities adjacent to the roadway on private property, including the Gatehouse at La Villa Firenze, two buildings associated with the Carnegie Institution's Broad Branch campus, Ingleside Manor, and Hillwood Estate, Museum and Gardens are also located within the APE. The NPS is currently conducting a Historic Trails Cultural Landscape study. Two historic trails along the southern end of the project area near the intersection of Broad Branch Road and Beach Drive (Soapstone Valley foot trail and a bridle trail to White Horse Trail) may be considered part of the future Historic Trails Cultural Landscape.

Figure S-1. Natural Resources

Figure S-2. Community Resources

While Rock Creek Park, designated Park/Recreation/Open Space land use, dominates the eastern side of the roadway, land use on the western side is predominantly Low Density Residential, with Institutional land area (Carnegie Institution of Washington, Ingleside at Rock Creek) and some Park/Recreation/Open Space (Fort Circle Park) at the northwestern end of the corridor. Rock Creek Park and an additional Institutional land area (Hillwood Estate, Museum and Gardens) occur at the southern end of the roadway. Five residences for foreign diplomats occur along Broad Branch Road on property owned by Sovereign Nations. Broad Branch Road provides access to these residences and facilities along the roadway. Existing traffic volumes suggest that there is adequate capacity and no need for capacity improvements on Broad Branch Road.

Broad Branch Road does not currently have sidewalk facilities, which poses a safety concern for pedestrians. Three trails, Soapstone Valley foot trail, Rock Creek Trail, and Western Ridge Trail are accessible from the project corridor. There are no sidewalks or marked crossings on Broad Branch Road to connect pedestrians with these trails. Broad Branch Road is currently signed as an on-street bike route, however only the southern portion (south of Brandywine Street) is officially mapped as such. The 2011 DC bike map lists it as having poor biking conditions, with no on-street bike lanes. The northern and southern termini of the project are located near on-street signed bike routes.

The rehabilitation of Broad Branch Road is included in the Transportation Improvement Program (TIP) for the Metropolitan Washington Region (Fiscal Years 2011 to 2016), and the scope of the project is consistent with the regional analysis included in the TIP. The National Capital Region *2010 Constrained Long-Range Transportation Plan* (CLRP) and the 2011-2016 TIP have been determined by the Metropolitan Washington Council of Governments (MWCOG) to conform to the intent of the State Implementation Plan (SIP). The Broad Branch Road project is not a project of air quality concern and existing noise levels do not exceed federal noise abatement criteria.

S.6 SUMMARY OF IMPACTS

The following briefly describes the principal environmental effects of the proposed project. **Table S-1**, located at the end of this summary, is a matrix showing the comparative effects of the alternatives.

S.6.1 NATURAL RESOURCES

Construction of each of the Candidate Build Alternatives would disturb land areas beyond the existing roadway infrastructure. The areas of disturbance range from 3.2 acres for the narrowest alternative (Alternative 2) to approximately 5.0 acres for Alternative 4. To minimize off-site impacts, Erosion and Sedimentation Control and Stormwater Management Plans will be developed in accordance with DC Municipal Regulations.

Each of the Candidate Build Alternatives is anticipated to result in improvements to local water quality by incorporating effective stormwater management systems. The proposed systems will reduce the volume and velocity of stormwater runoff entering receiving surface waters by increasing retention and infiltration. The improved stormwater management systems will

offset all additional runoff generated through increased impervious areas created by the alternatives.

In-stream work for this project would include replacement of the crossing at Soapstone Creek, reconstruction of culvert outfalls to Broad Branch, and restoration of existing or construction of new retaining walls along Broad Branch. Such in-stream work will require permits with the U.S. Army Corps of Engineers and District Department of the Environment in accordance with Sections 402 and 404 of the Clean Water Act.

A portion of the existing Broad Branch Road lies within the 10-year floodplain for Broad Branch stream and resulting in significant erosion damage to the roadway. The area of impervious surfaces within the floodplain will increase due to the addition of new pavement, curbs, gutters, sidewalk and/or bike lanes in each of the Candidate Build Alternatives and the new sidewalk included as Option B. Floodplain encroachment will involve between 1,698 square feet (0.04 acres) for Candidate Build Alternative 2 and 12,361 square feet (0.28 acres) for Candidate Build Alternative 4 – the widest alternative. None of the encroachments are expected to cause any increase in backwater elevations. An overall reduction in backwater flooding is expected with the increased floodwater capacity provided by the new culvert over Soapstone Creek.

No wetlands, navigable waters, or wild or scenic rivers have been identified in the immediate project area.

A search of agency databases, consultation with the U.S. Fish and Wildlife Service, and communication with park officials indicate no federal or state-listed threatened or endangered species are known to occur in the project vicinity.

Expansion of the roadway footprint and disturbance of areas adjacent to the roadway during construction will remove vegetation, including some large trees. Work conducted may damage trees located beyond the limits of disturbance if their root systems stretch into areas where ground breaking occurs. It is estimated that between 240 and 465 trees with diameters at breast height greater than 4 inches could be impacted. Impacts to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers.

S.6.2 Cultural and Paleontological Resources

Project effects to architectural resources include demolition, alteration of architectural traits, structural instability through vibration, short-term audio intrusions during construction, and visual intrusions to historic settings. Soapstone Creek Culvert, stormwater outfalls, segments of retaining walls, and boundary markers that are considered contributing elements to the RCPHD and the stone retaining walls associated with the gatehouse at La Villa Firenze will be impacted by implementation of Candidate Build Alternatives.

The Soapstone Creek Culvert will be demolished and replaced with a concrete arch culvert. Demolition of the Soapstone Creek Culvert will have an impact on this NRHP-eligible resource.

Portions of historic retaining wall segments that are contributing resources to the RCPHD may be affected by roadway construction if they are determined to require restoration or replacement as part of roadway reconstruction. In addition, use of heavy grading equipment will cause ground vibration which may damage or topple adjacent historic walls.

Portions of existing stone headwalls or stone retaining walls with openings for stormwater outfalls that are contributing resources to the RCPHD may be removed and replaced during excavation for replacement of the outfall pipes.

Three Rock Creek Park stone and metal boundary markers may be disturbed by roadway cut and fill activities. These markers may be inadvertently moved during roadbed preparation near the DDOT ROW or covered with fill but will be re-set after construction.

Visual intrusions to the historic setting of RCPHD would be minimized with the use of architecturally compatible designs and materials for the replacement of Soapstone Creek Culvert, new retaining walls, new outfall headwalls, and repair of historic stone retaining walls during outfall replacement.

The original stone retaining walls at the Gatehouse driveway entrance to La Villa Firenze extend into DDOT right-of way and at least a portion will be demolished with grading and construction for new retaining walls on the west side of Broad Branch Road under Alternative 2. Additional portions of the La Villa Firenze driveway retaining walls would be removed with proposed westward right-of-way expansion under Alternatives 3 and 4.

Segments of two trails considered contributing elements to the Historic Trails Cultural Landscape for Rock Creek Park are located along the southern end of the project area (Soapstone Valley foot trail and a bridle trail to White Horse Trail) (. Visual intrusions to the viewshed of this cultural landscape of RCPHD would be minimized with the use of architecturally compatible designs and materials for the replacement of Soapstone Creek culvert, new retaining walls, new outfall headwalls, and repair of historic stone retaining walls during outfall replacement with the implementation of the Candidate Build Alternatives. Temporary visual and audible intrusions to the RCPHD and cultural landscape will likely occur during the period of construction for any of the alternatives.

No ethnographic resources, museum collections, Indian Trust resources and Native American sacred sites, or paleontological resources occur in the project area and no impact to these resources would occur from the No Action or the Candidate Build Alternatives.

S.6.3 SOCIOECONOMIC RESOURCES

Encroachments outside the DDOT right-of-way occur on both the east and west sides of the existing roadway. This EA will serve to provide the appropriate action needed to correct these right-of-way inconsistencies, which may include an easement, land transfer, or permit.

Under Candidate Build Alternatives 3 and 4, additional areas outside the existing right-of-way would be required to provide pedestrian and bicycle facilities. Additional parcels or parts of parcels will not require relocation of a residence, business, or other structures. The acquisition

of right-of-way would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

The Candidate Build Alternatives are expected to have no effect on land use and zoning within the project corridor.

The project will not result in any impacts to low-income or minority populations.

S.6.4 Aesthetics and Visual Quality

Effects to aesthetics and visual quality in the project area include alteration of existing cultural and natural features and introduction of vertical elements that could obscure existing views. The visual quality within the project area where new retaining walls are proposed will change from natural or landscaped vegetation to discontinuous retaining walls varying in visible height, relative to one of seven vantage point from within four sectors, including Broad Branch Road itself, Rock Creek Park, and residential or institutional sectors on the west side of the roadway. Proposed retaining walls located on the east side of Broad Branch Road between 27th Street and Beach Drive are associated with Broad Branch and Rock Creek Park. From within the Broad Branch Road sector, the visual quality will change from natural trees and vegetation along the stream banks to discontinuous retaining walls with a visible height of 3.5 feet and ranging in length by each alternative. With all of the retaining walls on the east side measuring 3.5 feet in visible height, views into Rock Creek Park and Fort Circle Park from the roadway will be visible over the retaining walls for vehicle occupants, cyclists, and pedestrians. Proposed retaining walls on the east side of Broad Branch Road will most likely be viewed in their entirety from the top of the wall to the stream bottom within the Rock Creek Park sector. From a trail along Ridge Road, the retaining walls are between 7.5 feet and 13.75 feet high; and from Grant Road, the retaining wall is between 14.75 feet and 16.25 feet high, depending on the alternative. Other visual changes include replacement of the Soapstone Creek Culvert with a concrete arch culvert and the headwalls of three outfalls.

Views to the project area from the Gatehouse at La Villa Firenze (a vantage point in the residential sector) will be partially obstructed under each alternative by the construction of a retaining wall between 6.25 feet and 8.25 feet high on the north side of the entrance driveway and by a 5 to 6-foot high retaining wall associated with the new concrete arch culvert to replace the existing Soapstone Creek Culvert south of the entrance driveway. The combination of these two vertical elements will obstruct the view to the project area and beyond from the Gatehouse.

Under Candidate Build Alternatives 3 and 4, views to the project area from the Ambassador's residences (Ivory Coast and Tunisia) in the residential sector will include construction of retaining walls between 5.5 feet and 14.5 feet high. These vertical elements represent a visual intrusion of the project area as viewed from the Ambassador's residences hilltop vantage point.

Use of architecturally compatible designs and materials for construction of the new retaining walls would maintain the aesthetic quality associated with the rural feel of the roadway and match with the rural architectural elements such as Grant Road Bridge that are characteristic of the Park.

S.6.5 Community Resources

The project will have no adverse impacts on local community resources. Improved travelways should prove beneficial to local emergency service providers.

All Candidate Build Alternatives would require temporary disturbance and possible tree removal on NPS park property. Access for motorized vehicles would improve post-construction with the upgrade of facilities and improved safety resulting from stormwater management and improved roadway engineering. Candidate Build Alternatives 2, 3 and 4 would require temporary disturbance in Rock Creek Park near existing retaining walls for the restoration or construction of new walls. Additional land on the east side of the alignment would be needed for Alternatives 3 and 4 to accommodate new or replacement retaining walls, approximately 39 square feet and 2,252 square feet, respectively. This area would not alter the ability of the park to function as intended, and would enhance safe access to park facilities for both motorized and non-motorized users. A sidewalk on the west side of roadway in the southern part of the project area would connect the Soapstone Valley Trailhead to a NPS parking lot on Beach Drive and would be accomplished through a construction easement.

Under Alternatives 3 and 4, minor improvements to the existing Y-intersection at Brandywine Street and Broad Branch Road, will result in the permanent impacts to the traffic island/triangle park at the center of the existing Y-intersection with the addition of a sidewalk on the east edge of the island providing a linkage to the proposed sidewalk on the west side of the roadway.

Option C would result in a reconfiguration of the existing Y-intersection to a T-intersection and the elimination of the central traffic island/triangle park. The reduction in green space provided by this park would be offset by an increase in total green space at the intersection with the addition of two rain gardens at the interior corners of the new intersection.

S.6.6 Transportation

Under all of the Candidate Build Alternatives, DDOT would reconstruct Broad Branch Road improving infrastructure, stormwater management, and sight lines resulting in safer vehicle passage. Under Candidate Build Alternatives 3 and 4, continuous sidewalks along the length of the reconstructed roadway will provide an improved pedestrian facility. Alternative 4 would provide a dedicated bike lane and removes the conflict providing for a safer travel way for both modes. Short-term detours will be required during construction. Maintenance of traffic and detour plans will alleviate impacts to local travelers.

S.6.7 Air Quality

The proposed action will not result in any change in roadway capacity or adjacent land uses; therefore, there will be no measurable change in air quality parameters. Short-term impacts associated with construction will be mitigated through implementation of DDOT standard specifications.

S.6.8 Noise and Vibration

The proposed Candidate Build Alternatives will not result in any change in roadway capacity or its horizontal or vertical alignment. Therefore, no appreciable long-term impacts from noise

and vibration would occur from implementation of the Candidate Build Alternatives. Temporary increases to noise and vibration during construction may result in impacts to community resources, including the Carnegie Institution, and historic in the project area.

S.6.9 Hazardous Waste and Materials

Based on a review of available data and site inspections, no evidence of recognized environmental concerns (hazardous material sites) were identified in the project area.

S.6.10 Indirect and Cumulative Effects

There will be no induced or secondary effects caused by the proposed Candidate Build Alternatives. The proposed project would serve traffic generated by development on adjoining lands and beyond the limits of the project, but it would not cause any further such development. Moreover, the project is consistent with local comprehensive planning regarding land use goals in the surrounding area and transportation in the project corridor.

Despite the dramatic changes in the landscape that have occurred over time due to human settlement and development in the surrounding area, the intensity of the incremental or cumulative impacts of the project are considered small when reviewed in the context of impacts from other past, present, and reasonably foreseeable future actions and would not rise to a level that would cause significant cumulative impacts.

S.6.11 Section 4(f) Evaluation

The proposed action—rehabilitation of Broad Branch Road—will constitute an adverse effect on the Rock Creek Park Historic District (RCPHD), the Soapstone Creek Culvert, and the Gatehouse at La Villa Firenze and Section 4(f) uses of contributing elements of the RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, features associated with the Gatehouse at La Villa Firenze, and Rock Creek Park. All three Candidate Build Alternatives require the demolition and replacement of the Soapstone Creek Culvert in order to address the stormwater management deficiencies identified in the Purpose and Need. Any alternative that does not include the demolition and replacement of Soapstone Creek Culvert would compromise the project to the degree that it is unreasonable to proceed. The project purpose and need cannot be met while avoiding Section 4(f) properties. Therefore, there is no prudent and feasible avoidance alternative.

The proposed action includes all possible planning to minimize harm to the Section 4(f) resources through the use of context sensitive design and materials; reuse of existing materials as appropriate; and restoration of native tree species and vegetation in Rock Creek Park. FHWA and DDOT have coordinated with local agencies, NPS, DC SHPO, ACHP, and the consulting parties in the Section 106 process to minimize impacts to contributing elements of the RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, and features associated with the Gatehouse at La Villa Firenze and to develop mitigation measures to resolve the adverse effect on these historic properties.

The least harm analysis shows there are substantial differences between the Candidate Build Alternatives. The cost of Candidate Build Alternative 3 is $6.2 million greater than Candidate

Build Alternative 2; Candidate Build Alternative 4 is $8.1 million greater than Candidate Build Alternative 2. All three Candidate Build Alternatives meet the two primary factors of the purpose and need, to correct deficiencies in the existing roadway infrastructure and stormwater management system. Candidate Build Alternatives 3 and 4 address other factors of the purpose and need involving increased safety of motorists, pedestrians, and bicyclists; and establishing linkages to serve pedestrian and bicycle travel along the roadway itself as well as linkages into the Rock Creek Park Trail systems. A preferred alternative has not yet been selected.

Table S-1. Summary of Impacts

	NO ACTION	CANDIDATE BUILD ALTERNATIVES		
	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Meets Purpose and Need -Road Conditions -Stormwater Management -Multimodal Needs -Safety	No	Yes	Yes	Yes
Right-of-Way Acquisition (square feet)	0[1]	0[2] 3,737 (Option B)	28,827	41,823
Additional Area of Disturbance (acres)	0	3.18 2.54 (Option A) 3.27 (Option B)	4.86	5.03
Improvements to Stormwater Management	No	Yes	Yes	Yes
Soapstone Creek - Floodplain Encroachments (acres)	0	0.04 0.12 (Option B)	0.12	0.28
Stream Impacts (linear feet)	0	296	367	599
Wetlands Displaced (acres)	0	0	0	0
Threatened and Endangered Species	None	None	None	None
Loss of Trees (diameter at breast height > 4 inches)	0	285 45 less (Option A) 6 more (Option B) 3 more (Option C)	462 3 more (Option C)	460 3 more (Option C)
Archeological Resource Impacts	None	Potential Impacts	Potential Impacts	Potential Impacts
Historic Structure Impacts	None	Adverse Impacts	Adverse Impacts	Adverse Impacts
Land Use and Zoning	No Change	No Change	No Change	No Change
Environmental Justice Populations Affected	0	0	0	0
Retaining Walls – Viewed from Broad Branch Road and Rock Creek Park	None	Potential impacts to aesthetics and visual quality Adverse impacts to historic properties	Potential impacts to aesthetics and visual quality Adverse impacts to historic properties	Potential impacts to aesthetics and visual quality Adverse impacts to historic properties
Retaining Walls – Views from Residences	None	Potential impacts to aesthetics and visual quality	Potential impacts to aesthetics and visual quality	Potential impacts to aesthetics and visual quality

	NO ACTION ALTERNATIVE 1	CANDIDATE BUILD ALTERNATIVES		
		ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
Area of Permanent Park Impacts -Rock Creek Park -District Triangle Park	 0 0	 0 0	 39 600 3,502 (Option C)	 2,252 600 3,502 (Option C)
Pedestrian Improvements	No	No Yes (Option B)	Yes	Yes
Cyclist Facilities	No	No	No	Yes
Air Quality Impacts	None	None	None	None
Noise Impacts	None	None	None	None
Hazardous Materials	None	None	None	None
Construction Costs (millions)	N/A	$29	$34.2	$37.1
Construction Duration (months)	N/A	24	30	36

[1] The existing roadway is within DDOT right-of-way, with minor exceptions. These exceptions occur in six short sections along the project corridor where the existing roadway was constructed outside DDOT-owned property. These small areas account to a total area of 923 square feet. This EA will serve to provide the appropriate action needed to correct these inconsistencies, which may include an easement, land transfer, or permit.

[2] Activities outside the existing right-of-way (beyond the area of existing pavement previously mentioned) would be accomplished through easements.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act of 1978
ANC	Advisory Neighborhood Commission
APE	Area of Potential Effects
BLM	Bureau of Land Management
BMP	Best Management Practices
BOR	Bureau of Reclamation
CAA	Clean Air Act of 1970
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cf	Cubic Feet
cfs	Cubic feet per second
CLRP	Constrained Long Range Plan
CO	Carbon Monoxide
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments of 1990
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Plan
dBA	Decibels
DBH	Diameter at Breast Height
DCHPO	District of Columbia Historic Preservation Office
DCMR	District of Columbia Municipal Regulations

DC Water	District of Columbia Water and Sewer Authority (formerly WASA)
DDOE	District Department of the Environment
DDOT	District Department of Transportation
DO	Director's Order
DPR	District of Columbia Department of Parks and Recreation
The District	District of Columbia
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GHG	Green House Gases
GMP	General Management Plan
LID	Low Impact Development
LOS	Level of Service
LWCF	Land and Water Conservation Fund
MOA	Memorandum of Agreement
mph	Miles per Hour
MSAT	Mobile Source Air Toxics
MUTCD	Manual on Uniform Traffic Control
MWCOG	Metropolitan Washington Council of Governments
NAAQS	National Ambient Air Quality Standards
NAGRA	Native American Graves Protection and Repatriation Act of 1990
NCPC	National Capital Planning Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen Oxides

NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	National Rivers Inventory
NWI	National Wetlands Inventory
ORV	Outstandingly Remarkable Values
PEPCO	Potomac Electric Power Company
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 microns
PM_{10}	Particulate Matter less than or equal to 10 microns
PRPA	Paleontological Resources Protection Act of 2009
RCPHD	Rock Creek Park Historic District
SDWA	Safe Drinking Water Act
sf	Square Feet
SIP	State Implementation Plan
SWDC	Special Waters of the District of Columbia
TIP	Transportation Improvement Program
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compound
vpd	Vehicles Per Day
WOUS	Waters of the United States
WPD	Watershed Protection Division

1 PURPOSE AND NEED

The Federal Highway Administration (FHWA) in conjunction with the District Department of Transportation (DDOT) and in cooperation with the National Park Service (NPS), are proposing the rehabilitation of a 1.5-mile segment of Broad Branch Road, NW, between Linnean Avenue, NW and Beach Drive, NW, a portion of which abuts the southwestern border of Rock Creek Park (see **Figure 1-1**). FHWA has oversight responsibility for the Federal-aid program and is participating in the funding of the project. The existing two-lane Broad Branch Road lies almost entirely within DDOT right-of-way and is maintained by DDOT. The eastern edge of the roadway between 27th Street and Beach Drive, borders Rock Creek Park, which is owned and maintained by the NPS.

This Environmental Assessment (EA) will analyze a range of alternatives for improvements to the operations and safety of the roadway consistent with the project setting that will address deficiencies in the existing roadway infrastructure and stormwater management systems outside the existing DDOT right-of-way; improve the safety of motorists, pedestrians, and bicyclists; and enhance linkages that serve pedestrian and bicycle travel. Project goals were to minimize roadway elements that occur outside the existing DDOT right-of-way.

The EA and Section 4(f) Evaluation has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508), FHWA's *Environmental Impact and Related Procedures* (23 CFR 771), FHWA's *Technical Advisory Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (T6640.8A) (FHWA, 1987), DDOT's *Environmental Policy and Process Manual* (DDOT, 2008), and NPS Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision-making (*NPS, 2001). The project also includes the evaluation of potential effects to cultural resources in accordance with Section 106 of the National Historic Preservation Act.

1.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed action is to rehabilitate Broad Branch Road to satisfy operational and safety needs in a manner keeping with the setting of the project area. Context sensitive solutions will take into account the adjoining land uses including residential, foreign diplomatic properties, institutional developments and wooded areas, including Rock Creek Park. Improvements to the corridor will consider all modes of transportation including motorized vehicles, bicycles, and pedestrians.

1.2 NEEDS FOR THE PROPOSED ACTION

The needs for improvements to Broad Branch Road relate primarily to deficiencies in the existing roadway infrastructure and stormwater management system; the safety of motorists, pedestrians, and bicyclists; and linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems (i.e., Rock Creek Park Trail, Western Ridge Trail, and Soapstone Valley foot trail).

Figure 1-1. Project Location

1.2.1 INFRASTRUCTURE DEFICIENCIES

There are a number of deficiencies with respect to the current physical condition of Broad Branch Road, including deteriorating pavement and substandard roadway geometry, intersection geometrics, roadway shoulders, roadway structures (e.g., culverts, bridges, and guardrails), inadequate stormwater drainage, and aging and inadequate structures, as described further below.

ROADWAY PAVEMENT AND GEOMETRY

The existing Broad Branch Road roadway pavement is deteriorated and crumbling in many locations (see **Figure 1-2**), a problem exacerbated by stormwater drainage issues. The existing roadway has an apparent failed base, inadequate pavement, and roadway width less than required by current roadway design standards. Concrete curb is provided sporadically along the roadway, and has been infilled with asphalt in some sections. The pictures in Figure 1-2 illustrate the deteriorating pavement, side-slope erosion, steep roadway slopes, and the impact of ponding runoff due to inadequate stormwater management.

Figure 1-2. Deteriorated Infrastructure along Broad Branch Road

The majority of Broad Branch Road is classified as a collector roadway. Based on roadway design standards developed to provide for safe travel, the minimum design speed for a collector roadway is 30 miles per hour (mph) with a posted speed limit of 25 mph (DC Department of Transportation Design and Engineering Manual). While Broad Branch Road is currently posted for 25 mph, the roadway geometrics at two locations require speed reductions (to either 20 mph or 15 mph). In addition, 12 of 35 vertical curves[1] and 9 of 28 horizontal curves on Broad Branch Road do not meet the minimum requirements for this design speed and limit sight distance. The geometrics of the roadway reflect the topography within the study area, which is dominated by steep slopes and limited right-of-ways.

STORMWATER DRAINAGE

The project area generally drains from north to south and the offsite areas drain from west to east. Runoff from the roadway and adjacent offsite areas, west of Broad Branch Road, is collected by the existing storm drain system, where available, and discharged into Broad

[1] A vertical curve is a civil engineering term used to describe the smooth curve that is inserted between two sections of a road that are at different slopes in order to avoid an abrupt transition in passing from one to the other.

Branch. The roadway drainage system consists of inlets in the areas where there are existing storm sewer systems, and these discharge into Broad Branch in the Park via 21 existing outfalls, including both piped channels and low points along the roadway. A review of current conditions indicates that most of the inlets along the roadway are of inadequate capacity to capture combined runoff from the roadway and offsite areas. As a result, significant amounts of stormwater runoff bypass the inlets and sheet flow over the road and directly into Broad Branch. A lack of existing stormwater management facilities in the project area means that runoff from the roadway and offsite areas discharges into Broad Branch without any water quality treatment.

This uncontrolled runoff has also contributed in large part to the deterioration of the roadway, the stream banks of Broad Branch, and retaining walls adjacent to Broad Branch Road. The current conditions are unsafe because of these drainage issues; the lack of adequate stormwater management combined with the topography results in areas along the roadway where ponding often occurs. **Figure 1-3** illustrates deteriorated conditions caused by stormwater runoff within the roadway corridor.

Figure 1-3. Examples of Drainage Issues

ROADWAY STRUCTURES

Broad Branch Road crosses over Soapstone Creek on a single stone masonry semicircular arch culvert that is aging and substandard in terms of condition and its ability to convey floodwaters from major periodic storms (see **Figure 1-4**). An inspection of the culvert conducted in 2003 found the structure to be in generally satisfactory condition, however, deficiencies included collapsed headwall capping stones, poorly placed manhole cover grates, accumulated debris at the inlet (west side), collapsed stone retaining/wing walls on the east, non-standard cable wire guardrails, channel scour in the arch barrel, need for upstream channel bank stabilization to prevent overflow, and non-standard masonry parapet for crash protection (Wilbur Smith Associates, 2003). After numerous flooding episodes, a major storm event in April 2011 resulted in sinkholes in the roadway surface and a partial collapse of the arch (see Figure 1-4). DDOT took immediate measures to prevent further damage to the structure by covering the roadway holes with steel plates, installing a temporary bridging platform to permit one lane travel over the culvert, and implementing temporary structural repair to the culvert that included installation of a corrugated steel lining to stabilize the arch barrel. The temporary

repair was designed to last for approximately two to three years to allow time for design and construction a permanent replacement structure.

Figure 1-4. Soapstone Creek Culvert

1.2.2 SAFETY

Broad Branch Road can generally be characterized as a low-speed roadway (posted speed limit at 25 miles per hour) with a mix of straight and curved roadway sections. Rolling topography and steep grades play a role with respect to both the vertical geometrics of the roadway itself as well as adjacent lands, resulting in areas with limited sight distances that adversely affect the safety of motorists, pedestrians, and bicyclists. Navigation of the curves in the roadway and risk of running off the road or suddenly coming upon pedestrians, bicyclists, or other vehicles using the roadway are hazards that motorists encounter. Poor lighting within the roadway corridor also reduces available reaction time for the motorists, bicyclists, and pedestrians.

Safety is a primary concern on Broad Branch Road due to the lack of separate facilities for pedestrians and bicycles and due to speeding along the roadway, as reported by local residents. The lack of both sidewalks and dedicated areas for bicycles to travel means that the roadway is shared by motorized vehicles, bicycles, and pedestrians. Pedestrians walking within the project area (for exercise and recreation; to Rock Creek Park and other community facilities; or to visit neighbors) must walk within the roadway. The fact that users of each mode must be aware of the two other types of users within a constrained roadway corridor exacerbates safety concerns substantially.

The topography of the area also creates safety issues on Broad Branch Road with respect to drainage and the accommodation of stormwater. While pooling of water does not present a major concern for the relatively slow-moving vehicles on Broad Branch Road, it does present safety concerns to motor vehicles when the water freezes during winter months and to bicyclists year-round.

1.2.3 SYSTEM LINKAGE

As a roadway that is designated as a collector over most of its length, Broad Branch Road serves its intended function of providing access to residences along the roadway as well as to Rock Creek Park. In addition, daily commuters also use Broad Branch Road as a north-south alternative to Connecticut Avenue as well as for cross-Park movements through Rock Creek Park. Additional vehicular linkages or capacity are neither needed nor intended for this roadway. The roadway, however, does not provide needed linkages for both pedestrians and bicycles.

As noted, Broad Branch Road currently lacks safe amenities to serve pedestrians and bicycles. Two multi-use trails occur in the southern portion of the project area. On the east, the Western Ridge Trail provides access to Rock Creek Park and on the west, the Soapstone Valley Trail extends to Soapstone Valley. A third trail near the project area is Rock Creek Trail, a collection of paved multi-use paths and on-road bike routes within the boundaries of Rock Creek Park. To the south of the project area, the trail shares the alignment of Beach Drive. During the week, bicyclists must share the road with motorists on Beach Drive, but on weekends the road is closed to motorized vehicles. The trails are generally for recreational use and, because of their distance, less suitable for day-to-day activities. These trails have limited connectivity to Broad Branch Road due to lack of existing pedestrian or biking facilities in the roadway. The southern segment of Broad Branch Road, from Brandywine Street to Beach Drive, is depicted in the DC Bicycle Master Plan's Proposed Bicycle Facilities Map, as an on-street bicycle route that provides for needed linkages for bicycle travel within this area of the District (DDOT 2005c). Although only the southern segment is designated as a bicycle route, there are bicycle signs along the entire roadway in the project area. The master plan does not include any proposed improvements to the existing bicycle route or other portions of the road. Grant Road, which intersects Broach Branch Road north of Brandywine Street, is also a signed bicycle route. Improvements to enhance its ability to safely carry bicycles are needed to support the viable use of Broad Branch Road as a key linkage in the overall bicycle system.

There are no internal linkages or crosswalks for pedestrians to the parks and residential areas adjacent to Broad Branch Road.

1.2.4 LEGISLATION

As described in FHWA Technical Advisory T6640.8a, federal, state, and local government mandates are appropriate elements of the need for a proposed action. A key piece of local legislation related to the need for improvements to Broad Branch Road is the District of Columbia's Priority Sidewalk Assurance Act of 2010 (Law #L18-0227) enacted on July 7, 2010 and effective September 24, 2010. This law requires the installation of sidewalks "to ensure a safe and accessible environment for pedestrians and persons with disabilities." The law requires that, for roadways with no sidewalks on either side of the roadway, reconstruction shall include installation of a sidewalk. It further states that, for "roadways that are missing sidewalks, but are not undergoing major construction, sidewalk installation shall be prioritized for the following areas: (1) Missing sidewalks in school areas; (2) Routes that provide access to parks and recreational facilities; (3) Transit stops; (4) Locations where the absence of a sidewalk creates substantial pedestrian safety risks; and (5) Roadway segments for which residents petitioned to have sidewalks."

1.3 PROJECT OVERVIEW

1.3.1 BACKGROUND

The rehabilitation of Broad Branch Road was originally placed on DDOT's schedule of planned improvements because of the apparent needs for roadway repair and the desire for a safer facility. The roadway is unsafe because of drainage issues, as well as poor lighting and the tendency for drivers to exceed the posted speed limit.

The uncontrolled runoff from elevated parcels to the north and west of the roadway has contributed in large part to the deterioration of this two-lane roadway. The large volume of stormwater has also had detrimental effects on the adjacent streambeds in Broad Branch and Soapstone Creek. Extensive erosion at outfalls as well as at streambeds of the receiving waterways has been attributed to the high, erosive powers of the stormwater. The need for a total solution involving improvements on National Park properties has resulted in the NPS serving as a Cooperating Agency in the development of the EA. Other notable environmental issues associated with this project include Section 106 (cultural resources), Section 4(f) resources (cultural resources and parklands), habitat concerns (fish and wildlife), water quality, and residential concerns (noise and visual intrusion and bike/pedestrian safety).

Aging infrastructure has contributed to the deficiencies in the roadway corridor. The culvert carrying Broad Branch Road over Soapstone Creek has been temporarily repaired after partial collapse and requires permanent replacement. Replacement of this culvert will be addressed as a part of the upgrades planned for Broad Branch Road.

The District Department of the Environment (DDOE) is currently working with the NPS in conducting a stream restoration "daylighting" project to an unnamed tributary of Broad Branch in the northern end of the project corridor (DDOE and NPS, 2012).

1.3.2 Description of the Project Area

Broad Branch Road is a two-lane roadway located in northwest Washington, DC. The portion of Broad Branch Road in the identified project area extends south from Linnean Avenue to just north of Beach Drive, a distance of approximately 1.5 miles. For much of its length, the roadway parallels the channel of Broad Branch. The approximately 170-acre Broad Branch watershed is a highly urbanized sub-watershed of Rock Creek. As shown in Figure 1-1, Rock Creek Park (owned by NPS) is located immediately east of Broad Branch Road south of 27th Street, which creates a wooded, rural-like setting for much of the project corridor, as shown in **Figure 1-5**. Rock Creek Park is one of the largest forested urban parks in the United States, nearly a mile wide in some places, and contains a wide variety of natural, historical, and recreational features in the midst of Washington, DC. It is this rural-like context within an otherwise urbanized area that residents suggest make this roadway very unique.

Areas north of 27th Street include institutional properties, single- and multi-family residences, and additional parkland. The Carnegie Institution of Washington, Department of Terrestrial Magnetism (DTM), a scientific research facility, and Ingleside at Rock Creek, a retirement facility, occur on the north side of the roadway in this segment. Residences, including those for the ambassadors of Tunisia, Ivory Coast, and Peru also occur in this same area. Parkland on the north end of the Broad Branch Road corridor comprises portions of the Civil War Defenses of Washington (Fort Circle Parks) system, another management unit of the NPS. South of 27th Street, areas to the west of Broad Branch Road include the residential neighborhood of Forest Hills, embassy residences for Italy and Malaysia, a trailhead for Soapstone Valley Trail, and Hillwood Museum and Gardens. A small triangle park is located in the traffic island at the intersection of Broad Branch Road and Brandywine Street.

Figure 1-5. Existing Roadway

At its southernmost point, Broad Branch Road crosses into NPS property before intersecting with Beach Drive. The road alignment becomes Blagden Avenue after it crosses Rock Creek.

1.4 PROJECT GOALS

Project goals were established by the study team to aid in the development of improvement concepts for Broad Branch Road. These goals were developed by considering the purpose and need, agency/public comments, and project area constraints. The goals for the Broad Branch Road project are listed below:

- Create a safe facility for all users of the roadway (motorists, pedestrians, bicyclists)
- Effectively manage stormwater runoff
- Avoid/minimize use of parklands by staying out of the NPS right-of-way to the extent possible
- Preserve and protect environmental resources – both man-made and natural – and retain the current context of the corridor (i.e., visual aesthetic, using context-sensitive solutions in the planning and design phases of the project)
- Provide improved access to Rock Creek Park
- Utilize environmentally sensitive materials and practices

In addition to the project goals, the proposed improvements for Broad Branch Road consider design criteria outlined in the American Association of State and Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (AASHTO, 1999); DDOT *Design and Engineering Manual*, Chapter 28 (DDOT, 2009b); DDOT *Standard Specifications for Highways and Structures* (DDOT, 2009e). DDOT *Bicycle Master Plan* (DDOT, 2005b); DDOT *Bicycle Facility Design Guide* (DDOT, 2005a); DDOT *Environmental Policy and Process Manual* (DDOT, 2008); the *Manual on Uniform Traffic Control Devices (MUTCD) Traffic Controls for Bicycle Facilities, Part 9* (FHWA, 2009); *District of Columbia Pedestrian Master Plan* (DDOT, 2009d); AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities* and 2010 Update of the AASHTO Guide(AASHTO, 2004; Toole, 2010); and other design guidance.

1.5 DESIGN CONSIDERATIONS

Based on data collection, field observation, and input from the project's stakeholders, the study team formulated an array of considerations to help with the development of alternatives for the proposed improvements to Broad Branch Road. Field reviews were conducted with DDOT and NPS staff to gain first-hand knowledge about issues in the roadway corridor. Stakeholder input was gathered at agency and public scoping meetings. Finally, data collection and research, as documented by the environmental conditions and considerations presented in Chapter 3, were used to best address necessary Broad Branch Road improvements while incorporating community needs and resource preservation.

The following considerations led to the formation of alternatives and options that were carried forward for detailed study or dismissed.

1.5.1 ROADWAY CONSIDERATIONS

Roadway improvements considered consisted of reconstructing the roadway subgrade, repaving, and realigning to improve sight distances, as necessary. Various widths of the roadway's travel surface varied depending on the inclusion of various elements. These widths and elements include:

- Varying lane widths – 10, 11, and 12 feet
- Travel lanes with and without shoulders, curbs and gutter
- Shared travel lanes that include bike lanes

1.5.2 BICYCLE AND PEDESTRIAN CONSIDERATIONS

To accommodate other modes of transportation, consideration was given to bicyclist and pedestrian facilities; which included:

- Bike lanes – on and off the travel lanes
- Sidewalks and walking trails
- Shared-use paths for walking and biking

1.5.3 STORMWATER MANAGEMENT CONSIDERATIONS

Stormwater runoff can be controlled by a series of improvements that are located on or adjacent to the roadway. Within the roadway, curb and gutter can be incorporated to convey waters to catch basins and into storm sewer systems. Adjacent to the roadway, the project may implement Low Impact Development (LID) principles and practices so that water can be managed in a way that reduces the impact of built areas and promotes the natural movement of water within the ecosystem and watershed. There are many practices that can be used to adhere to these principles and include, but are not limited to, the following:

- Vegetated grass swales
- Planting Strips
- Bioretention cells or swales
- Rain gardens

1.6 RELATIONSHIP TO OTHER PLANS AND STUDIES

The project is consistent with the District's planning documents and projects, including the following.

1.6.1 DISTRICT OF COLUMBIA BICYCLE MASTER PLAN

The DDOT *2005 Bicycle Master Plan* (DDOT, 2005c) includes several core goals and recommendations to establish a world-class bicycle transportation system in the District of Columbia. Several strategies are named to increase bicyclist safety and security while improving the connectivity and accessibility of destinations and activity centers within the District of Columbia. The proposed improvements to Broad Branch Road, which can enhance pedestrian and bicycle facilities along the roadway, is consistent with the first goal of the plan: to provide "more and better facilities."

1.6.2 DISTRICT OF COLUMBIA PEDESTRIAN MASTER PLAN

The proposed improvements to Broad Branch Road are consistent with the *District of Columbia Pedestrian Master Plan (*DDOT,2009d*)*, which seeks to reduce the number of pedestrian/motor vehicle crashes and increase pedestrian activity by making walking a comfortable and accessible mode of travel throughout all parts of the District. The Plan also encourages improved facilities and policies to promote the benefits of walking for transportation, recreation, and health. Proposed improvements include the addition of pedestrian facilities along the entire length of the roadway to ensure a safe and accessible environment for pedestrians and persons with disabilities.

1.6.3 ROCK CREEK TRAIL PROJECT

DDOT and NPS are developing plans to rehabilitate the Rock Creek Multi-Use Trail and Rose Park Trail in Rock Creek Park from M Street on the south end to Broad Branch Road/Beach Drive on the north end, including a spur trail along the Piney Branch Parkway. The design plan will address several key elements, including development of new trail connections. The proposed improvements to Broad Branch Road would provide improved access to and from the multi-use trail system in Rock Creek Park.

1.6.4 ROCK CREEK WATERSHED IMPLEMENTATION PLAN

The DDOE Watershed Protection Division (WPD) operates under a mission to conserve the soil and water resources of the District of Columbia and to protect its watersheds from nonpoint source pollution. Consistent with that mission, WPD has prepared a *Rock Creek Watershed Implementation Plan* (DDOE, 2010). The plan states that "(t)he Watershed Implementation Plan is an effort to create a watershed-based non-point source pollution control plan that meets EPA's requirements for acceptance while providing a realistic and adaptable guide for agencies responsible for the restoration of Rock Creek at the local level."

The proposed improvements to Broad Branch Road are consistent with the District's goals of improving water quality and managing nonpoint source pollution. An important component in addressing these issues is managing the large quantities of uncontrolled and untreated stormwater runoff flowing into Rock Creek and its tributaries from impervious surfaces. Stormwater management for this project would support the goals set forth in the *Rock Creek*

Watershed Implementation Plan by following its recommendations, including implementation of LID projects, bioretention measures, erosion and sediment control, restoration of eroded stream banks, and tree plantings.

1.6.5 Comprehensive Plan of the National Capital

The *Comprehensive Plan of the National Capital (*DC Government, 2007c*)*, which was first adopted in 1984 and 1985 and is updated periodically, is a general policy document that provides overall guidance for future planning and development of the city. The plan is comprised of two parts, the District Elements and the Federal Elements, which are adopted by the DC Council and the National Capital Planning Commission (NCPC), respectively.

The proposed improvements to Broad Branch Road support the *Comprehensive Plan of the National Capital: District Elements'* 13 citywide elements that provide goals, objectives, and policies for land use issues that impact the whole city, e.g., transportation, environment, parks and open space, historic resources, cultural resources, arts, and culture. The plan contains recommendations for maintaining these goals including:

- Increasing investment in bus and rail transit, pedestrian and bicycle facilities, and other modes of travel to solve the region's traffic problems and sustain economic growth;
- Promoting natural resource conservation and environmental sustainability by protecting, restoring, and enhancing earth, water, air, and biotic resources of the District;
- Protecting, maintaining, and improving social, economic, historic, and physical qualities of residential neighborhoods;
- Improving the connections between different transportation modes, improving traveler safety and security, and increasing system efficiency;
- Improving connections to the city's celebrated spaces, such as Rock Creek Park;
- Retaining historic and unique qualities of Washington's streetscapes; and,
- Encouraging land use patterns and land uses that reduce air pollution and facilitate pedestrian and bicycle travel.

The proposed improvements to Broad Branch Road are consistent with each of these plan goals.

1.6.6 Rock Creek Park General Management Plan

The *Rock Creek Park General Management Plan* (NPS, 2006) is a comprehensive and integrated plan that guides the management of Rock Creek Park and the Rock Creek and Potomac Parkway in a way that best meets diverse demands on park resources. The Plan's approved alternative, "Improved Management of Established Park Uses," retains the current scope of visitor uses while improving visitor safety, better controlling traffic volumes and speeds through the Park, enhancing interpretation and education opportunities, and improving the use of park resources, especially cultural resources. The proposed improvements to Broad Branch Road are consistent with the goals of the *General Management Plan* in that they would improve the safety of pedestrian, bicycle, and roadway linkages to the Park while not detracting from the use of park resources.

1.6.7 Fort Circle Parks General Management Plan

During the Civil War, the federal government built fortifications surrounding Washington, DC to protect the city and vital supply routes. The remains of these fortifications are managed as an administrative unit of the NPS designated as the Fort Circle Parks (Civil War Defenses of Washington).

In 2004, the NPS completed a General Management Plan (GMP) for the Fort Circle Parks (NPS, 2004). The GMP allows for these resources to be preserved for future generations and to be interpreted in an easily understandable manner. Rock Creek Park, one of three NPS units that manage the Fort Circle Parks, administers a semicircle of these Civil War sites. The northern portion of the project area for the Broad Branch Road rehabilitation project is immediately adjacent to the Rock Creek Park portion of the Fort Circle Parks.

1.6.8 Restoration of Unnamed Tributary to Broad Branch Environmental Assessment

The DDOE and NPS have prepared an Environmental Assessment (EA) to address the potential environmental impacts associated with a project to restore a currently piped portion of an unnamed stream that empties into Broad Branch to its historic open channel, a process known as "daylighting" (DDOE and NPS, 2012). The project restores approximately 1,600 linear feet of the stream, located upstream of 36th Street to just upstream of the crossing on Broad Branch Road, across the street from the entrance to the Embassy of Ivory Coast. The existing conditions have allowed fast-flowing stormwater to erode gullies and the stream banks causing sedimentation to occur, destabilizing the surrounding environment, reducing infiltration of water into aquifers, and compromising habitat. The daylighting project will help treat and remove pollutants by exposing stream water to sunlight, air, soil, and vegetation, and reduce nutrient and sediment pollution from erosion. The EA was made available to the public in February 2012. Implementation of the proposed project is expected to occur in advance of the proposed roadway rehabilitation project.

1.6.9 Replacement of the 27th Street, NW Bridge

DDOT will replace the existing roadway bridge (District of Columbia Bridge #0017) carrying 27th Street, NW over Broad Branch stream. The project consists of a complete bridge replacement, including substructure, superstructure, and approach roadway reconstruction. The existing bridge was built in circa 1925 for the purpose of carrying 27th Street, NW over the stream. The bridge currently functions as part of the District's roadway network. In 2009, an average of 3,200 vehicles per day traveled over the bridge. However, the bridge is in need of replacement as it is severely deteriorated and poses a safety risk to travelers. DDOT has prepared a Categorical Exclusion document to accompany the Preliminary Engineering Report and for the replacement of the 27th Street, NW Bridge over Broad Branch stream (AECOM 2012).

1.6.10 Improvements to the DC Water Sanitary Sewer System in Soapstone Valley

DC Water is currently preparing NEPA documentation to examine potential impacts from rehabilitating or replacing the existing sanitary sewer system in Soapstone Valley. Soapstone Valley surrounds Soapstone Creek, a tributary of Broad Branch, and includes an unpaved hiking trail near the southern end of the Broad Branch Road project area. The proposed sewer

project begins at the trailhead at Albemarle Street and extends east through the valley, to the end of the trail at Broad Branch Road. NPS manages the majority of the project area as Soapstone Valley Park, but the western and eastern ends of the project area occur within DDOT right-of-way. The main sewer line occurs under the Soapstone Valley foot trail in many locations and erosion along the banks of the stream has exposed segments of the line and narrowed the width of the trail path. The east end of the DC Water project area overlaps the DDOT Broad Branch Road project area where Soapstone Creek Culvert conveys Soapstone Creek under Broad Branch Road. The proposed project will affect the mainline and all laterals in the valley and all access manholes. The proposed sewer project will also consider potential improvements to the trail as part of the sewer line rehabilitation.

In the Broad Branch Road project area, an 18-inch diameter sanitary sewer line parallels the south side of Soapstone Creek ending about 20 feet from Broad Branch Road where a manhole marks the location of a split in the lines. A 21-inch diameter pipe extends southeast under Broad Branch Road, accessible from another manhole in the roadway, and an 18-inch pipe extends northeast under the Soapstone Creek streambed, the existing west headwall of the Soapstone Creek Culvert, and to another manhole along the eastern edge of Broad Branch Road.

DC Water has indicated that specific alternatives for the sewer line rehabilitation are currently being developed. The environmental document is expected to be available for public review in six to 12 months (by August 2014) and a construction contract is anticipated to be awarded in the summer of 2016, likely after completion of the Broad Branch Road rehabilitation project. DDOT will continue to coordinate with DC Water on the replacement structure for Soapstone Creek Culvert to verify that the new culvert and headwalls would not conflict with repairs to or replacement of the existing sewer line.

2 ALTERNATIVES

This chapter documents the process used to develop improvement concepts for Broad Branch Road and describes the resulting project alternatives, which were developed in accordance with the goals established to meet the project purpose and need. In this EA, a No Action Alternative and three Candidate Build Alternatives are considered for the rehabilitation of Broad Branch Road.

2.1 ALTERNATIVES DEVELOPMENT PROCESS

While the main purpose of the project is to reconstruct Broad Branch Road and control stormwater runoff, other elements are also being studied for inclusion within the roadway cross-section, including bicycle and pedestrian facilities. With regard to the latter, recent DC legislation (see Section 1.2.4) has prompted the need for pedestrian accommodations within the corridor. Furnishing sidewalks along Broad Branch Road would also conform to the District's Complete Street Program, a policy document that encourages the provision of sidewalks along DC streets.

Alternatives development consisted of a multi-step collaborative process with the study team, stakeholders, and the public to develop a range of alternatives that incorporate elements to address each of the project's needs:

- Roadway elements
- Stormwater and drainage elements
- Bicyclist and pedestrian elements

The first step in the process was scoping that included an agency coordination meeting [March 24, 2011], a public scoping/concept development meeting [July 13, 2011], and a alternatives development meeting with federal and local agency representatives [August 25, 2011]. At these three meetings, input was gathered from the stakeholders and public on the perceived deficiencies and problems within the roadway corridor. In addition, the study team collected information on desirable roadway, stormwater management and drainage, and pedestrian and bicyclist elements that would improve roadway operations and safety. The meetings also provided the stakeholders and public an opportunity to mix-and-match the various roadway, stormwater management, and pedestrian and bicycle elements to develop roadway cross-section concepts. The concepts were developed using a series of "building blocks" that included various roadway widths, sidewalks, bike lanes, and stormwater management elements (curbs, swales and rain gardens), as shown in **Figure 2-1**.

The concepts that were developed at the meetings were placed in a scaled tray that reported the width of the resulting concept. The width of the concepts was then compared to existing District Department of Transportation (DDOT)-owned right-of-way along the entire roadway corridor. The existing right-of-way ranges from approximately 33 feet to 120 feet wide. This

part of the exercise demonstrated what concepts could be constructed within the existing DDOT right-of-way and which would require right-of-way acquisition. Seven different concepts were developed at the public meeting ranging in width from 22 to 33 feet. In addition, 22 concepts were developed by agency representatives, ranging in width from 22 to 41 feet. Each of the concepts is presented in **Appendix A**.

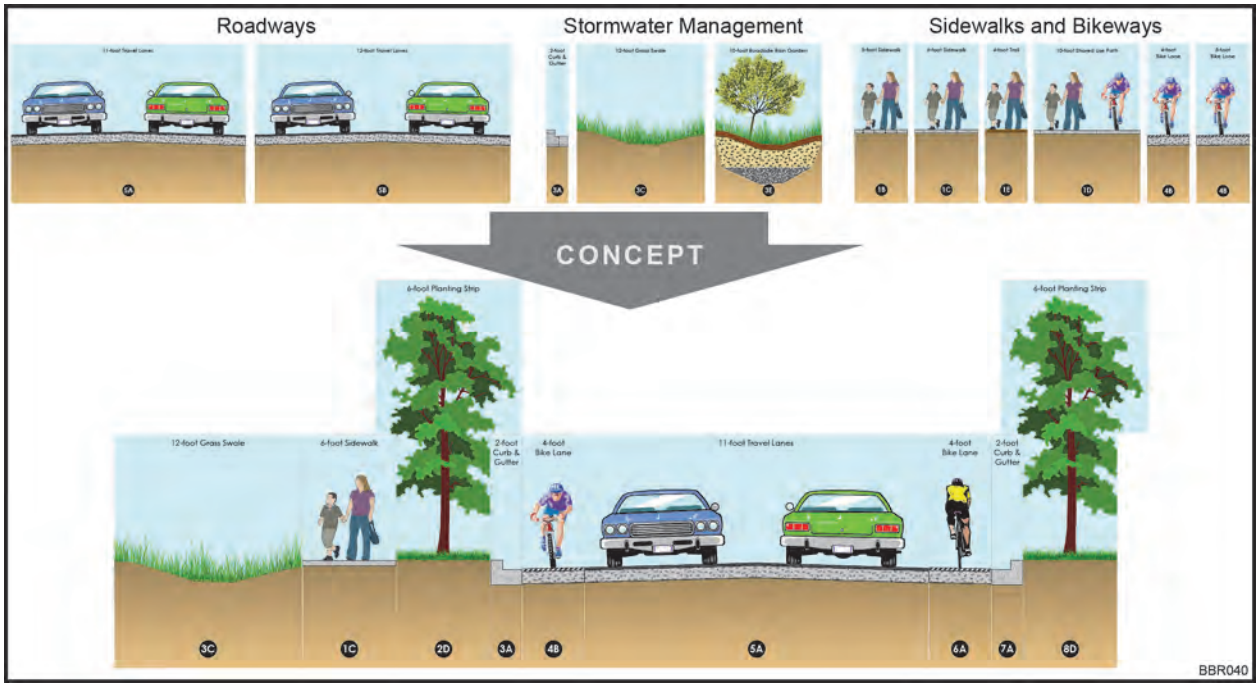


Figure 2-1. "Building Blocks" to Roadway Concepts

These concepts served as the foundation for the final step in the process: the development of three Candidate Build Alternatives that consider the agency and public input as well as meet the project's purpose and need. The three alternatives, described in detail in the subsequent sections, were developed for the purposes of identifying topographic constraints and cut/fill needs, footprint, and environmental impacts, as discussed further in Chapter 4. The alternatives were formally presented at a Public Alternatives Meeting on November 8, 2012.

Along its 1.5-mile length, Broad Branch Road varies in terms of its topography and roadway cross-section. As noted above, the DDOT-owned right-of-way ranges from approximately 33 to 120 feet in width along Broad Branch Road. The narrowest width (33 feet) is generally located at the southern end of the corridor, south of Brandywine Street, which limits the types of improvements at this end of the corridor. While the DDOT-owned right-of-way width generally increases north of Grant Road and Davenport Street, the proximity of Broad Branch stream and Rock Creek Park presents design constraints along the east side of the roadway up to where the Broad Branch stream crosses the road approximately 1,000 feet from the northern terminus of the project.

Given these varying features, one cross-section may not be appropriate for the full length of the roadway and the project considered variable cross-sections based on the project purpose and

need and the available right-of-way. Each of the proposed end-to-end alternatives and design options that have been identified for each alternative are described further below.

2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative (Alternative 1), the improvements to Broad Branch Road would include short-term minor restoration activities (safety and routine maintenance) that maintain the continuing operation of the existing roadway.

The existing roadway is located within DDOT right-of-way, with minor exceptions. These exceptions occur in six short sections along the project corridor where the existing roadway was constructed outside DDOT-owned property. These small areas account to a total area of 923 square feet. All but one location are located on the east side of the roadway where the northbound lane encroaches on National Park Service (NPS)-owned property in Rock Creek Park (see Figure B-2 in Appendix B). The single encroachment on the west side of the roadway occurs where a curve in the southbound lane enters private property owned by a Sovereign Nation (the Republic of Peru). The location of the roadway, outside of the DDOT-owned right-of-way, may be due to inconsistencies in survey bounds that existed when the current Broad Branch Road was constructed or may be the result of previous repaving projects. This Environmental Assessment (EA) will serve to provide the appropriate action needed to correct these inconsistencies, which may include an easement, land transfer, or permit.

While the No Action Alternative does not meet the purpose and need of the project, it provides a basis for comparing the environmental consequences of the Candidate Build Alternatives.

2.3 CANDIDATE BUILD ALTERNATIVES

The three Candidate Build Alternatives will address deficiencies in the existing roadway infrastructure and stormwater management systems; improve the safety of motorists, pedestrians, and bicyclists; and enhance linkages with respect to serving pedestrian and bicycle travel. Each of the Candidate Build Alternatives involves a minor westward shift in the existing roadway alignment to avoid or minimize impacts to Broad Branch stream and Rock Creek Park.

For any of the Candidate Build Alternatives, prior to any land disturbance activities, tree protection measures, protective fencing, and other best management practices (BMPs) would be installed. The existing roadway infrastructure within the project area would be removed including pavement, curb and gutter, inadequate stormwater drainage systems, as well as debris and trees that present a hazard. DDOT would include in the contractor specifications that all removed materials be disposed of or recycled in accordance with the DDOT *Standard Specifications for Highways and Structures* (2009e). Additional measures for the protection of cultural resources (e.g., historic retaining walls, culvert headwalls, stone boundary markers along the park boundary) will also be incorporated in the contractor specifications.

All Candidate Build Alternatives would be designed to accommodate widths and weights of utility maintenance vehicles and emergency response vehicles. Grading and placement of clean fill would be necessary to prepare a stable bed for the roadway and to provide adequate

drainage conveyance. Existing profile elevations would be raised or lowered in steeper areas to minimize blind crests and improve sight distances along the roadway.

Inadequate stormwater inlets and culverts would be reconstructed and resized to appropriately convey water. Specifically, a new culvert is proposed for the roadway over Soapstone Creek toward the southern end of the project area. As discussed in Section 1.6, the emergency replacement of Soapstone Creek Culvert was performed as a separate action independent of the Candidate Build Alternatives addressed in this EA; however, design plans for the permanent replacement structure for the culvert are analyzed in this EA. In addition, existing culverts at other locations may need to be extended to accommodate a wider corridor with additional roadway elements under some alternatives.

Both travel lanes of the roadway will be paved with a normal cross slope so that all roadway runoff would be directed to the curb and gutter on each side of the roadway. Stormwater management would be accomplished through a closed, underground system, which would collect and treat the runoff and direct it to the existing outfall locations along the corridor. The locations of the outfalls for each Candidate Build Alternative are shown in Appendix B. Existing pipes in those outfalls with structural elements will be replaced with reinforced concrete pipes. Replacement of these pipes will require reconstruction of stone surrounds in portions of the stone retaining wall and stone headwalls. Improvements to pipes and outfalls located within DDOT-owned right-of-way will be conducted as part of the proposed action and incorporated as part of each Candidate Build Alternative. Improvements to pipes and outfalls located within Rock Creek Park will be the responsibility of the NPS and will be coordinated with the proposed action.

Cross culverts will be used along the Broad Branch Road, where it is necessary and feasible, to prevent the offsite runoff from entering the roadway and to divert it to the existing outfalls. For all Candidate Build Alternatives, concrete ditches behind the retaining walls would direct the offsite runoff to the proposed drainage system. Water quality catch basins will be used, wherever feasible, to screen debris and filter sediment before discharging runoff to the existing outfalls.

Stormwater management will be improved by providing bio-swales/rain gardens where space is available along with water quality catch basins. Rain gardens will be incorporated on the west side of the roadway at the north end of project area under each Candidate Build Alternative and at the intersection with Brandywine Street under Option C using Low Impact Development (LID) techniques. The following features will be included in the rain gardens:

1. A bioretention area will be located adjacent to the roadway to act as a filter, applying BMPs. Runoff from the roadway would flow to the bioretention area as sheet flow, where it would filter through the 2.5- to 4-foot thick layer of sand media and into perforated underdrain pipes surrounded by aggregate and geotextile to filter material before being discharged to the existing storm drain system through an inlet structure connected to the existing drain system.

2. The inlet structure will also serve as an overflow structure to divert excess water out of the rain garden.

Stormwater management at the north end of the project area is being coordinated with the "daylighting project" being undertaken by the NPS and District Department of the Environment (DDOE). The proposed project will unearth the pipe carrying an unnamed tributary of Broad Branch and restore the stream to a more natural system. The "daylighting" is intended to remove pollutants from the stream by exposing it to sunlight, air, soil, and vegetation; and reduce nutrient and sediment pollution from erosion caused by fast-moving stormwaters. The combined effects of both projects are expected to relieve downstream erosion of banks and gullies.

Coping and retaining walls would be incorporated where feasible to minimize the limits of disturbance and footprint of the roadway. Retaining walls would be designed with context sensitive materials to complement the setting of Rock Creek Park and the surrounding area as well as incorporate construction methods to minimize intrusion into the Rock Creek Park properties. Potential methods for constructing walls on the east side include reinforced concrete walls faced with stone or dry-stacked gravity walls constructed of local stone (where feasible). Compatible materials may also be brought to the site to supplement existing materials. Walls on the west side would be reinforced concrete faced in stone. The type and depth of wall footers on both the east and west sides will be contingent on the results of geotechnical analysis to be conducted during the final design phase of the project. Designs and construction methods would be developed in close coordination with NPS.

Following construction, additional restoration along Broad Branch Road would include replanting of native tree species and vegetation including restoration of landscaped areas in front of adjacent property owners on the west side of the road with commensurate landscaping. Species would be selected in consideration of the natural and cultural landscapes, as well as the aesthetics of Rock Creek Park and residential and institutional areas.

Where feasible, sidewalk treatments will be in keeping with the context of the project setting. Treatments include trail-like designs or the use of colored concrete or pavers. The selection of treatment types will take place during final design.

All three Candidate Build Alternatives would be properly signed and marked in accordance with standards of the American Association of State Highway and Transportation Officials (AASHTO) and DDOT, and the *Manual on Uniform Traffic Control Devices* (MUTCD). Features such as signage and lighting would be incorporated into more detailed design plans.

The following subsections describe the three proposed Candidate Build Alternatives for the rehabilitation of Broad Branch Road. Alignment plans for each of the three Candidate Build Alternatives are presented in **Appendix B** and detailed cost estimates are presented in **Appendix C**.

2.3.1 Candidate Build Alternative 2

Candidate Build Alternative 2 is the minimum width alternative that meets the purpose and need of the project. It consists of two 10-foot travel lanes with standard curb and gutter on the east side with either a standard curb and gutter or a linear rain garden (bio-swale) to capture

stormwater runoff on the west side, as shown in **Figure 2-2**. The proposed curb is intended to prevent the edge of the new roadway from unraveling and discourage tree roots from disturbing the roadway base, as well as protect side slopes from stormwater runoff. In addition, curbs will provide the additional benefit of traffic calming. The 10-foot-wide linear rain garden will be provided between the sidewalk and roadway for approximately 1,000 feet southward of Linnean Avenue. This alternative has a cross-section width ranging from approximately 23 to 37 feet.

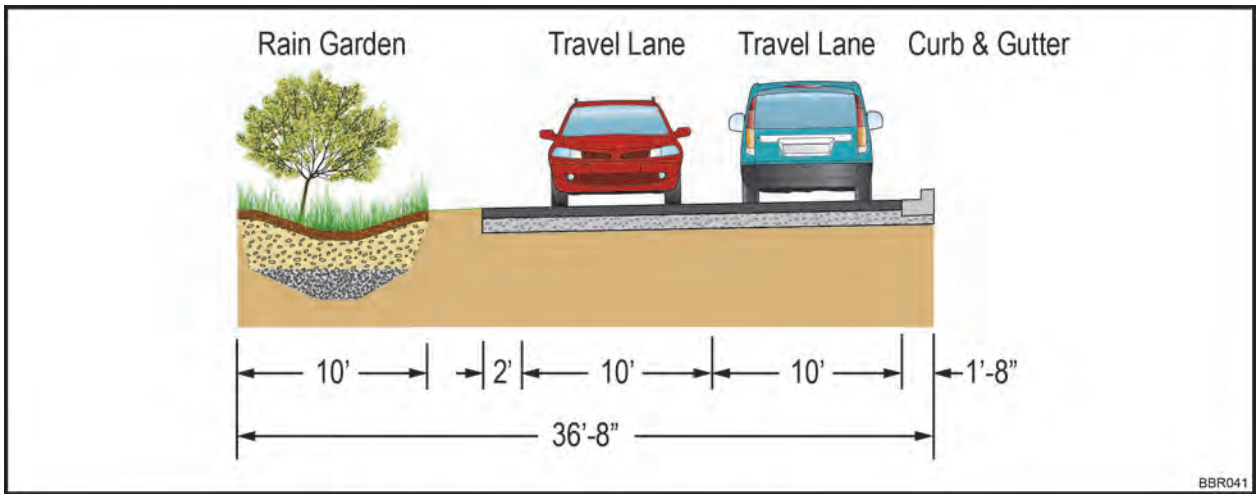


Figure 2-2. Candidate Build Alternative 2

This alternative allows all elements of the reconstructed roadway to be located within the existing DDOT right-of-way, as shown in **Figure 2-3** and **Figure B-2 in Appendix B**, with minor exceptions as detailed in Section 2.2. Notwithstanding these exceptions, there are no physical components proposed under Candidate Build Alternative 2 which would require acquisition of additional right-of-way, as needed, from the NPS or from private property. Areas requiring cut-and-fill activities outside the existing right-of-way are limited to nine discrete locations totaling 249 square feet (91 square feet on the east side and 157 on the west side) and would be accomplished through easements.

The intersection of Broad Branch Road and 27th Street will be modified under Candidate Build Alternative 2. The locations of stop bars are set back from the roadway curve and the bar is parallel for both left and right turns for southbound motorists on Broad Branch Road. The triangular roadway paint and barriers would be removed – see Figure B-2 in Appendix B. Alternative 2 retains the existing Y-configuration at the intersection of Broad Branch Road and Brandywine Street with minor changes to the width of traffic lanes on Brandywine Street as shown in Figure B-2 in Appendix B.

Retaining Walls. Some segments of the roadway will require new or replacement retaining walls (or coping walls) to minimize cut-and-fill areas and to limit improvements to the DDOT-owned right-of-way. As previously noted, runoff from uphill areas behind the walls would be collected in concrete ditches behind the retaining walls and conveyed to existing outfalls via channels or storm sewers. On the east side of the roadway along the banks of Broad Branch, nine segments of

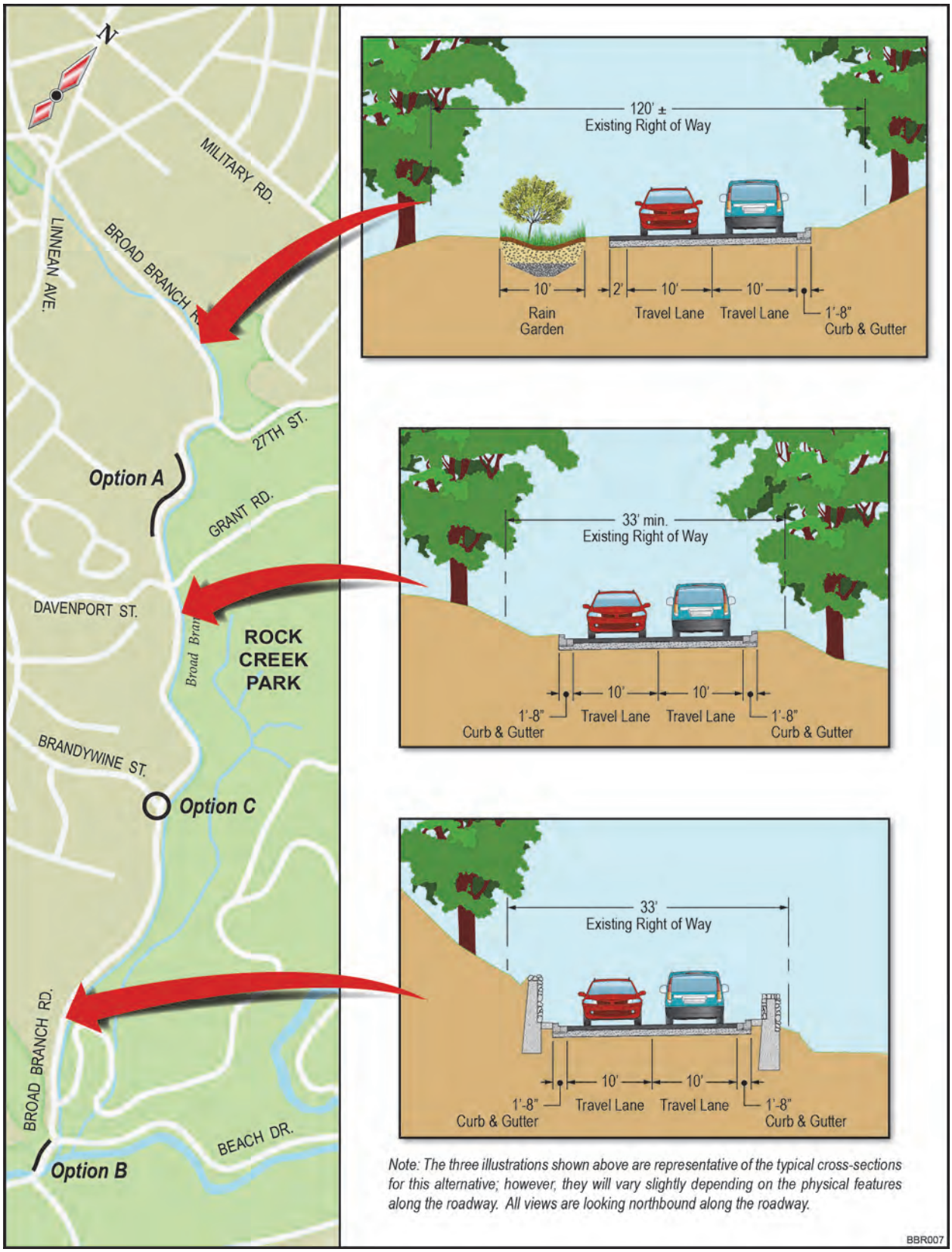


Figure 2-3. Candidate Build Alternative 2 – Typical Sections

retaining walls, totaling over 1,750 feet in length, are required. The walls are designed to extend 3.5 feet above the top of the curb, as viewed from within the roadway, to meet DDOT safety standards. To meet these standards and accommodate the steep slope along the edge of the roadway, the total wall height ranges from 8 to almost 15 feet (see **Table 2-1**; **Figure 2-4**). Much of this height will occur below ground surface so the portion of the wall visible from the stream side will be limited to 4.5 to 6.5 feet high (Table 2-1). The 12 retaining walls proposed on the west side of the roadway will range in height from 3 to 7 feet above the top of the curb and total nearly 2,600 feet in length. Slope stability analysis will be conducted during final design to confirm the requirement for walls on the west side; walls may be eliminated or reduced in height based on this analysis. The location and height of these walls are also shown in Figure B-2 in Appendix B. The wall segments are required to meet design criteria. The majority of walls proposed on the east side of the roadway would be located within several feet of or partially overlap the footprint of existing stone walls. Several of these walls are contributing resources to the Rock Creek Park Historic District and traverse both DDOT and NPS property. DDOT will conduct necessary engineering studies, including stability analysis and wall crash rating analysis, to assess the condition of existing walls. The information will be used to determine whether new walls will need to be constructed to replace existing walls or whether existing walls can be restored and stabilized in their existing location to meet design standards. Where replacement structures are required, DDOT will construct the new walls within the existing wall's footprint. DDOT will also examine feasible methods to tie new walls into existing walls while ensuring structural stability and safety. Where existing walls cannot be restored, stone from the walls will be retained for potential reuse in the construction of new walls. Several coping walls (walls less than 18 inches in height) will also be incorporated along the roadway within DDOT right-of-way.

Table 2-1. Retaining Walls – Candidate Build Alternative 2 (measurements in feet)

WEST SIDE						EAST SIDE					
SEGMENT	START	END	HEIGHT	VISIBLE HEIGHT	LENGTH	SEGMENT	START	END	HEIGHT	VISIBLE HEIGHT	LENGTH
R1W	28+30	30+00	4.50	4.50	169	R1E	29+64	30+40	13.50	6.00	79
R2W	33+15	35+60	3.50	3.50	244	R2E	32+74	33+05	9.00	3.75	31
R3W	44+45	45+11	4.00	4.00	72	R3E	33+90	34+15	11.00	4.25	25
R4W	46+58	49+07	3.00	3.00	252	R4E	38+54	38+73	13.25	4.00	18
R5W	51+39	55+36	6.00	6.00	392	R5E	45+90	46+34	14.25	5.50	44
R6W	63+81	65+13	3.50	3.50	129	R6E	47+75	49+95	14.75	6.75	220
R7W	65+18	65+75	5.00	5.00	58	R7E	53+53	53+68	8.00	3.25	15
R8W	69+25	72+61	5.00	5.00	336	R8E	69+34	70+15	10.50	4.50	81
R9W	78+02	80+66	4.50	4.50	266		77+03	80+25	11.00	4.50	325
R10W	83+37	86+35	7.00	7.00	302	R9E	80+25	88+50	8.75	4.00	815
R11W	86+92	87+48	5.00	5.00	56		88+50	89+49	10.50	4.00	98
R12W	88+12	91+34	4.00	4.00	322						
Total Length					**2,597**						**1,751**

Drainage and Stormwater Management. In general, the roadway will have a normal cross slope and runoff will be directed toward the curbs and collected in water quality catch basins to be installed on the east and west sides of the roadway. These catch basins will screen debris and filter sediment before discharging runoff to the 21 existing outfall locations along the east side of the roadway. The locations of all outfalls are depicted in Figure B-2 in Appendix B. Cross culverts will be used where it is necessary and feasible, to prevent the offsite runoff from entering the roadway and divert it to the existing outfalls. Although no new outfalls will be added, existing outfalls will be improved with the installation of new reinforced concrete pipe (RCP) in locations where there are existing pipes, some of which are collapsed or broken, or silted in. Replacement of stormwater pipes will require work at outfalls exiting through headwalls or retaining walls. Several of the outfalls occur on NPS property and many are contributing resources to the Rock Creek Park Historic District. Work associated with these outfalls will be conducted in consultation with the NPS. If work is to be performed by DDOT it will require a temporary construction easement. Walls surrounding existing pipes will be reconstructed after old pipes are removed, existing trenches are minimally excavated to accommodate new pipes, and new pipes are installed. Construction activities will be limited to areas immediately surrounding outfalls, following DDOT standards.

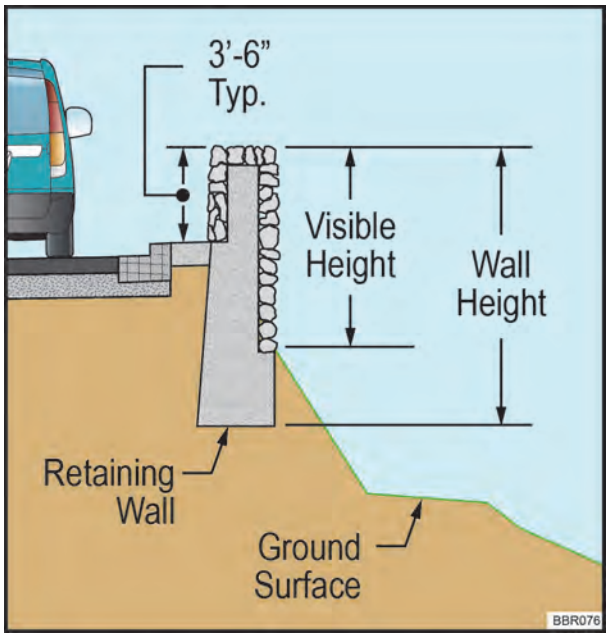


Figure 2-4. Typical retaining wall segment along the east side of Broad Branch Road, facing north

A linear rain garden will be incorporated on the west side, between the sidewalk and the roadway, at the north end of project to incorporate LID techniques into the roadway redesign by reducing the amount of impervious surface in the project area and increasing green space. The rain garden will include a bioretention area adjacent to the roadway where runoff from the roadway would flow and be filtered through a layer of sand and into perforated underdrain pipes surrounded by aggregate and geotextile. Filtered stormwater would then be discharged to the existing storm drain system through an inlet structure connected to the existing drain system. The inlet structure will also serve as an overflow structure to divert excess water out of the rain garden.

Soapstone Creek Culvert Replacement. A major component of the stormwater management systems improvements to be accomplished in the rehabilitation of Broad Branch Road includes replacement of the Soapstone Creek Culvert. The existing Soapstone Creek Culvert, a six-foot wide, stone arch culvert constructed in 1898, would be replaced with a 16 feet by 9 feet high precast concrete arch culvert with an opening 16 feet wide by 4 feet high (**Figure 2-5**). The new structure is designed to reduce the frequency of stormwater events overtopping the roadway and the extent of flooding.

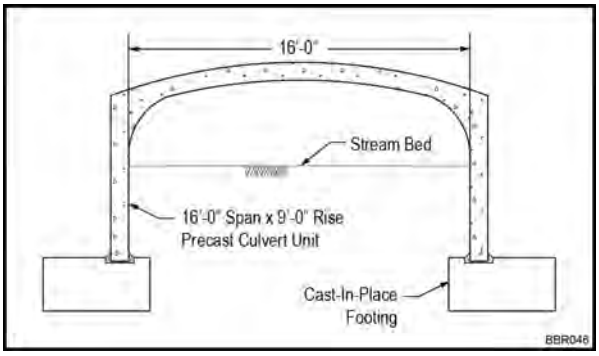


Figure 2-5. Soapstone Creek Culvert Replacement Design

The culvert would be constructed of a precast concrete arch segment placed on concrete strip footing foundations alongside Soapstone Creek measuring 32 feet long. Headwalls above the culvert on both upstream and downstream sides would be constructed of concrete panels clad in stone which could be a mix of usable existing stone and new stone using context sensitive design. The headwalls would extend from the top of the culvert opening to above the road surface level to form parapets. Two wingwalls constructed of precast concrete panels would be attached to the culvert and the headwall on each elevation and would run parallel to the roadway. The wingwalls would also extend above the roadway level, forming parapets, and would be clad in stone, similar to the headwall. Both the headwalls and wingwalls would serve a dual purpose of both retaining earth fill and providing crash protection for the roadway. The inside surface of the arch would be concrete, but could optionally be either smooth to resemble the partially parged surface of the interior red brick lined arch, or formed and colored to resemble unparged red brickwork.

The resulting structure would resemble the existing historic culvert in form and visible materials with the exception of the inner surface of the arch which would be either gray concrete or red concrete with a brick texture. For functional reasons, the arch opening would be larger than the existing structure and the position and angle of the replacement structure with respect to the roadway (skew angle) would be slightly altered to accommodate improved constructability. The stonework would match the existing material and irregularly coursed rough-cut/uncut pattern to the maximum extent possible. Finalization of form, patterns, materials, and color will be determined in consultation with the NPS cultural resources specialist during final design.

The road deck over Soapstone Creek will match the roadway elements along the rest of Alternative 2 and be approximately 23 feet in width.

Project Cost and Duration. The total estimated project cost for Alternative 2 is $29.0 million. The approximate construction duration is 24 months.

Option A. Expanded Retaining Wall. Option A includes an expanded retaining wall along the west side of the roadway between Stations 39+45 and 45+11 in an area bordering residential development. This option increases the length of the retaining wall from approximately 70 feet to approximately 560 feet. The longer wall segment will reduce the amount of cut for roadway side slopes required for rehabilitation of the roadway within the existing right-of-way. The shorter (70 foot) retaining wall meets the requirement to maintain the existing right-of-way but would require additional cut for side slopes, increasing the potential for erosion in this area.

Option B. Sidewalk. An optional 6-foot wide sidewalk can be provided on the west side of Broad Branch Road from Soapstone Creek to the parking lot entrance just north of Beach Drive.

This option improves linkages between park facilities along the roadway. This option also includes a retaining wall along most of the sidewalk's length. The retaining wall varies in height from 3.5 to 12 feet. Portions of the proposed wall and sidewalk occur on property west of the DDOT right-of-way on the Hillwood Museum and Gardens estate. Construction of this option would require acquisition of right-of-way on private property for the new roadway elements and a minimal cut line beyond the edge of the wall. The portion of the sidewalk and retaining wall on NPS property would be built as part of a temporary construction easement. No right-of-way would be acquired from NPS.

Option C. T-Intersection at Brandywine Street. A new T-intersection is proposed at Brandywine Street to replace the existing forked Y-intersection (see Figure B-2 [Sheet 6 inset] in Appendix B). The landscaped island at the center of the intersection is a "triangle park" maintained by the District Department of Parks and Recreation (DPR) in partnership with DDOT. The reconfiguration of this intersection is being proposed to reduce the paved area and incorporate additional LID techniques in the roadway design with rain gardens in the interior corners of the new intersection. The reconfigured intersection will also improve roadway safety by minimizing crash risk for northbound drivers on Broad Branch Road turning left onto Brandywine Street. Requiring drivers to stop at a stop sign at the T-intersection, instead of yielding as with the existing Y-intersection, will also reduce speeds at the intersection.

2.3.2 Candidate Build Alternative 3

Candidate Build Alternative 3 consists of two 10-foot travel lanes, a 6-foot wide sidewalk on the west side of the roadway for the entire length, and standard curb and gutter as shown in **Figure 2-6**. A 10-foot wide linear rain garden will be provided, between the sidewalk and the roadway, for approximately 1,000 feet southward of Linnean Avenue where the curb and gutter will be located only along the east side of the roadway. South of that, a 4-foot wide planting strip will separate the sidewalk and roadway for the length of the project and the curb and gutter will be located on both sides. Candidate Build Alternative 3 extends the proposed sidewalk from the end of the DDOT right-of-way into a 6-foot wide sidewalk that reaches the Rock Creek Park parking lot entrance just north of Beach Drive.

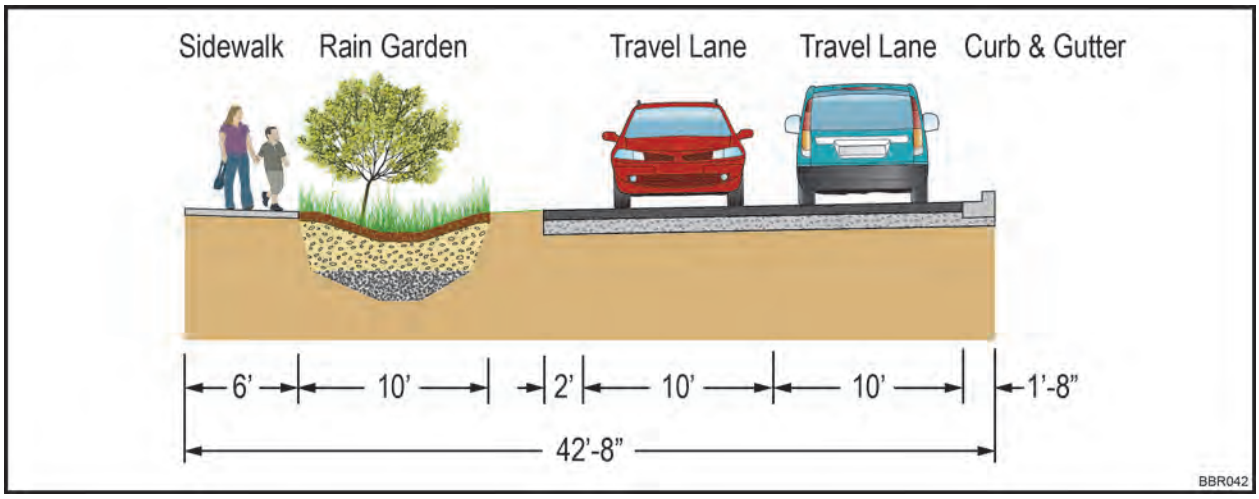


Figure 2-6. Candidate Build Alternative 3

As noted above, the proposed curb is expected to prevent the edge of the new roadway from unraveling; discourage tree roots from spreading underneath the roadway base; and control runoff. In addition, the curb provides the added benefit of traffic calming.

This alternative has a cross-section width ranging from approximately 33 to 43 feet from curb to outer edge of sidewalk. The typical cross-sections along the entire length of the roadway are shown in **Figure 2-7** and **Figure B-3** in **Appendix B**.

In addition to the areas where the current roadway exceeds existing right-of-way as noted in Section 2.2, new right-of-way will be required on the west side along narrow portions of the roadway to accommodate the new sidewalk. Limited right-of-way, approximately 39 square feet, may be required along the east side of the roadway on NPS land to accommodate the construction of proposed new retaining walls; however, the final locations of new retaining walls and additional right-of-way, as needed, will be determined after completion of engineering studies to assess the condition of existing walls prior to a determination regarding the need for new walls. In addition to the potential for right-of-way acquisition, narrow areas proposed for grading (fill) occur along the right-of way, the largest of which is approximately 2 feet wide by 50 feet long at the southern end of the project area south of Ridge Road (Station 91+00). Any grading outside the existing DDOT right-of-way will require a temporary construction easement.

The intersection of Broad Branch Road and 27th Street will be modified to split the right and left turn lanes for southbound motorists on Broad Branch Road, allowing for improved turning movements at the intersection – see Figure B-3 in Appendix B. The existing Y-configuration at the intersection of Broad Branch Road and Brandywine Street would be retained under Alternative 3 with minor changes to the width of traffic lanes on Brandywine Street and the addition of a sidewalk across the east end of the traffic island. Crosswalks would be added to facilitate pedestrian access to and use of the new sidewalk on the western side of the road as shown in Figure B-3 in Appendix B.

Retaining Walls. Some sections of roadway will require retaining walls (or coping walls) to minimize right-of-way requirements and stabilize slopes. Similar to Candidate Build Alternative 2, runoff from uphill areas behind the walls would be collected in concrete ditches behind the retaining walls and conveyed to existing outfalls via channels or storm sewers. On the east side of the roadway along the banks of Broad Branch, 13 segments of retaining walls, totaling over 1,700 feet are required. Like Alternative 2, the walls are designed to extend 3.5 feet above the top of the curb, as viewed from within the roadway, to meet DDOT safety standards. The total wall height ranges from 8 to 16 feet due to the slope down to Broad Branch. Much of this height will occur below ground surface so the portion of the wall visible from the stream side will be limited to 4.5 to 6.5 feet high (**Table 2-2**). The 16 retaining walls on the west side of the roadway will range from 3 to 13 feet high and total over 4,500 feet in length. Final wall heights will be determined during final design based on soil stability analysis. Walls may be eliminated or reduced in height based on this analysis. Although there is an increase in the number of retaining walls compared to Candidate Build Alternative 2, the average length of each retaining wall is shorter. The locations of these walls are shown in Figure B-3 in Appendix B. The majority of walls

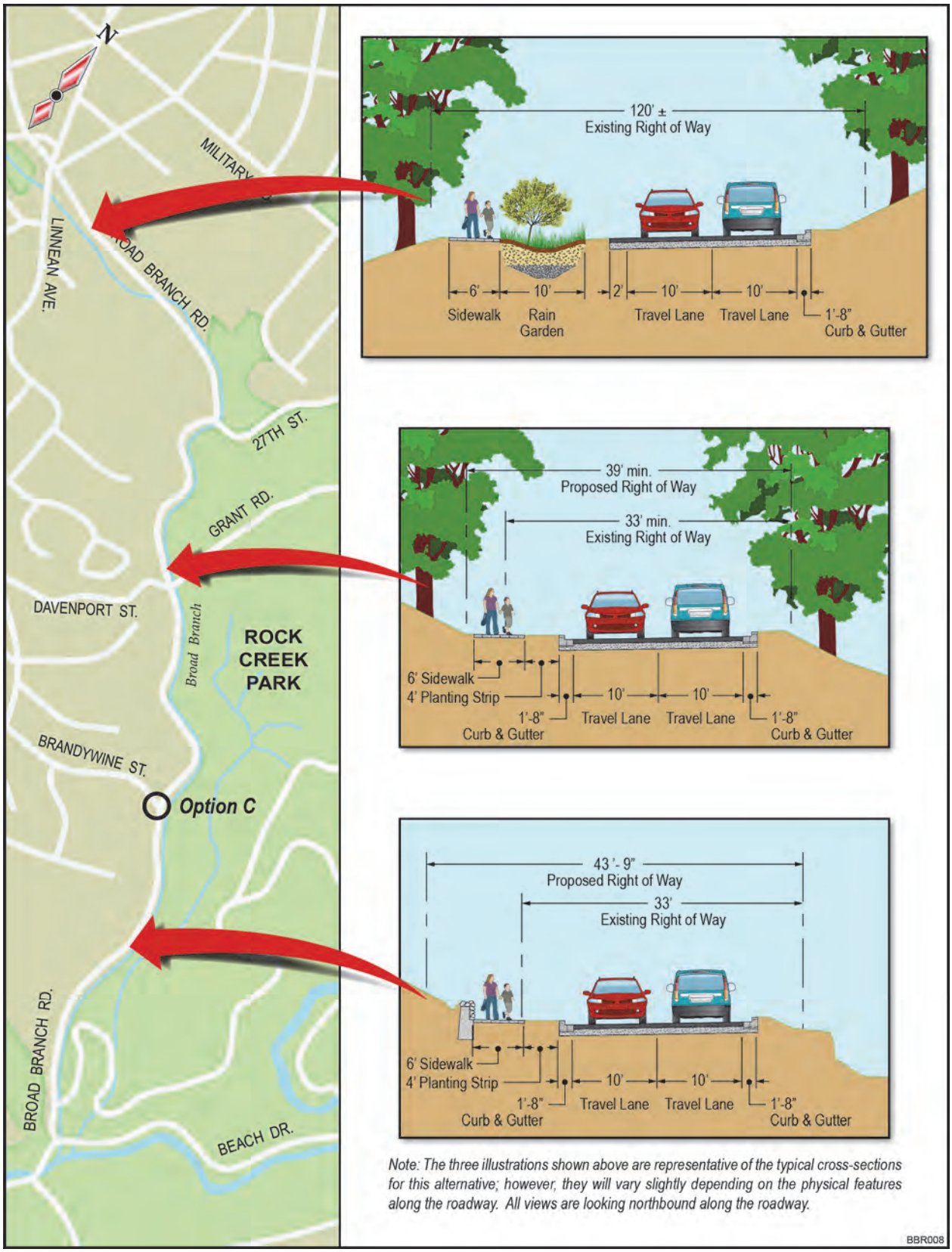


Figure 2-7. Candidate Build Alternative 3 – Typical Sections

Table 2-2. Retaining Walls – Candidate Build Alternative 3 (measurements in feet)

WEST SIDE						EAST SIDE					
SEGMENT	START	END	HEIGHT	VISIBLE HEIGHT	LENGTH	SEGMENT	START	END	HEIGHT	VISIBLE HEIGHT	LENGTH
R1W	26+17	27+53	5.50	5.50	135	R1E	29+64	30+50	14.50	6.25	89
R2W	28+18	30+41	8.50	8.50	220	R2E	32+73	34+06	10.75	3.00	135
R3W	33+00	35+65	7.50	7.50	262	R3E	38+50	38+68	14.25	4.00	18
R4W	36+60	39+58	3.00	3.00	315	R4E	44+25	44+50	11.50	3.25	20
R5W	39+63	40+28	3.25	3.25	65	R5E	45+83	46+54	16.25	5.00	69
R6W	44+29	45+12	6.00	6.00	94	R6E	47+74	49+94	15.75	8.25	220
R7W	46+53	48+78	8.00	8.00	231	R7E	53+55	53+65	11.50	3.25	10
R8W	51+25	52+66	12.50	12.50	136	R8E	57+83	58+11	10.00	4.50	27
R9W	52+86	54+30	8.50	8.50	141	R9E	69+30	70+25	12.50	4.50	95
	54+30	55+82	11.50	11.50	144	R10E	77+21	77+41	10.25	5.00	24
	55+82	56+69	7.00	7.00	87	R11E	77+71	78+64	8.00	5.50	96
R10W	60+35	61+47	4.50	4.50	112	R12E	79+01	79+12	9.75	4.00	11
R11W	62+23	64+09	6.00	6.00	158	R13E	81+27	82+76	10.00	4.50	145
	64+09	65+29	11.00	11.00	117		82+76	87+50	8.25	4.25	470
	65+29	65+92	7.00	7.00	63		87+50	90+31	11.50	4.00	278
R12W	67+84	68+89	6.25	6.25	105						
R13W	69+23	70+07	4.00	4.00	84						
	70+07	70+87	7.00	7.00	84						
	70+87	71+81	10.75	10.75	91						
	71+81	73+15	5.75	5.75	131						
R14W	73+50	78+04	2.50	2.5	434						
	78+04	81+02	8.00	8.00	301						
	81+02	83+21	3.00	3.00	224						
	83+21	85+26	13.00	13.00	212						
	85+26	86+41	8.25	8.25	116						
R15W	86+84	87+45	5.00	5.00	62						
R16W	87+70	89+50	7.25	7.25	185						
	89+50	91+16	12.50	12.50	163						
	91+16	91+95	6.00	6.00	79						
Total Length					**4,549**						**1,707**

proposed on the east side of the roadway would be located within several feet of or partially overlap the footprint of existing stone walls. Several of these walls are contributing resources to the Rock Creek Park Historic District and traverse both DDOT and NPS property. DDOT will conduct necessary engineering studies, including stability analysis and wall crash rating analysis, to assess the condition of existing walls. The information will be used to determine whether new walls will need to be constructed to replace existing walls or whether existing walls can be restored and stabilized in their existing location to meet design standards. Where replacement structures are required, DDOT will construct the new walls within the existing footprint wall's footprint. DDOT will also examine feasible methods to tie new walls into existing walls while ensuring structural stability and safety. Where existing walls cannot be restored, stone from the walls will be retained for potential reuse in the construction of new walls.

Drainage and Stormwater Management. Stormwater management upgrades are similar to those described in Candidate Build Alternative 2 and will include improvements to existing outfalls. Like Candidate Build Alternative 2, Candidate Build Alternative 3 includes replacement of the Soapstone Creek Culvert. The replacement of the Soapstone Creek Culvert will be the same in form, pattern, materials, and color as identified for Candidate Build Alternative 2; however, the structure will be slightly wider over Soapstone Creek than Alternative 2. The concrete strip footing foundations on which the precast concrete arch rests will be approximately 41 feet long and the road deck over Soapstone Creek for Alternative 3 will be approximately 29 feet in width to accommodate the six-foot sidewalk on the west side of Broad Branch Road.

Option C. T-Intersection at Brandywine Street. A new T-intersection is proposed at Brandywine Street to replace the existing forked Y-intersection – see Figure B-3 in Appendix B. The intersection design is very similar to that described in Option C under Candidate Build Alternative 2 with the addition of sidewalks on both sides of Brandywine Street to connect to the sidewalks proposed for the western side of Broad Branch Road. The design also includes wheelchair accessible ramps/aprons, and a crosswalk.

Project Cost and Duration. The total estimated project cost for Candidate Build Alternative 3 is $34.2 million. The approximate construction duration is 30 months.

2.3.3 Candidate Build Alternative 4

Candidate Build Alternative 4 is the widest of the project alternatives and consists of two 10-foot travel lanes, a 6-foot wide sidewalk on the west side, a 4-foot wide bike lane on east side, and standard curb and gutter, as shown in **Figure 2-8**. A 10-foot wide linear rain garden will be provided between the sidewalk and the roadway for approximately 1,000 feet southward of Linnean Avenue. The curb and gutter will be located only along the east side of the roadway in this location. South of that, a 4-foot wide planting strip will separate the sidewalk and roadway for the length of the project and the curb and gutter will be located on both sides. Candidate Build Alternative 4 extends the proposed sidewalk from the end of the DDOT right-of-way into a 6-foot wide sidewalk that reaches the Rock Creek Park parking lot entrance just north of Beach Drive.

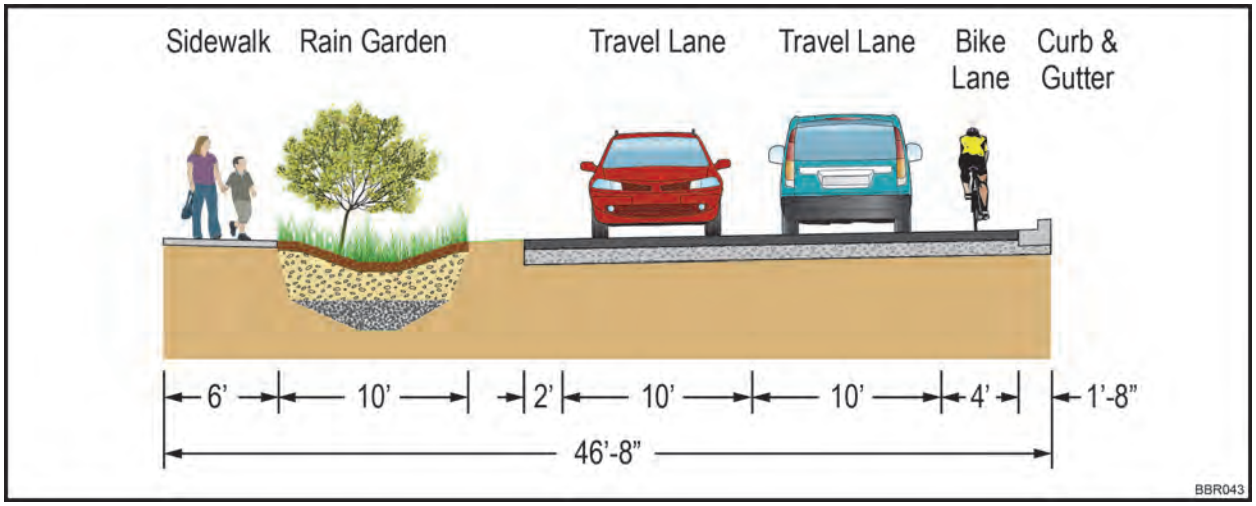


Figure 2-8. Candidate Build Alternative 4

As previously, the proposed curb is expected to provide improved runoff control, as well as prevent the edge of the new roadway from unraveling and discourage tree roots from disturbing the roadway base. In addition, the curb provides the added benefit of traffic calming.

This alternative has a cross-section width ranging from approximately 37 to 47 feet from curb to outer edge of sidewalk. The typical cross-sections along the entire length of the roadway are shown in **Figure 2-9**.

In addition to the areas where the current roadway exceeds existing right-of-way as noted in Section 2.2, new right-of-way will be required on both sides of the roadway to accommodate the sidewalk and planting strip on the west side and retaining walls on the east side. Like Alternative 3, Alternative 4, may also require additional right-of-way, approximately 2,200 square feet, along the east side of the roadway on NPS land to accommodate the construction of proposed new retaining walls (pending engineering studies to assess the condition of existing walls). Areas proposed for grading (fill) occur along both the east and west sides of the right-of way. Any grading outside the existing DDOT right-of-way will require a temporary construction easement.

Like Alternative 4, the Broad Branch Road intersection with 27th Street will be modified to split the right and left turn lanes for southbound motorists on Broad Branch Road, allowing for improved turning movements at the intersection – see Figure B-4 in Appendix B. The intersection will also be wider to accommodate the northbound bike lane. The existing Y-configuration at the intersection of Broad Branch Road and Brandywine Street would be retained under Alternative 4 with minor changes to the width of traffic lanes on Brandywine Street and the addition of a sidewalk across the east end of the traffic island. Crosswalks would be added to facilitate pedestrian access to and use of the new sidewalk on the western side of the road as shown in Figure B-4 in Appendix B.

Retaining Walls. Some sections of roadway will require retaining walls in order to minimize right-of-way requirements and stabilize slopes. Like Candidate Build Alternatives 2 and 3, runoff from uphill areas behind the walls would be collected in concrete ditches behind the retaining walls and conveyed to existing outfalls via channels or storm sewers. On the east side of the roadway along the banks of Broad Branch, 21 segments of retaining walls, totaling over 2,300 feet in length, are required. Like Alternatives 2 and 3, the walls are designed to extend 3.5 feet above the top of the curb, as viewed from within the roadway, to meet DDOT safety standards. The total wall height ranges from 3 to 17 feet. Much of this height will occur below ground surface so the portion of the wall visible from the stream side will be limited to 4.5 to 6.5 feet high (**Table 2-3**). The 16 retaining walls on the west side of the roadway range from 3 to 16 feet high and total nearly 4,700 feet in length. Soil stability analysis to be conducted during final design will confirm requirements for the walls; walls may be decreased in height or eliminated based on the results of studies. Although there is an increase in the number of retaining walls compared to Candidate Build Alternatives 2 and 3, the average length of each retaining wall is shorter than either of the other alternatives. The locations of these walls are shown in Figure B-4 in Appendix B.

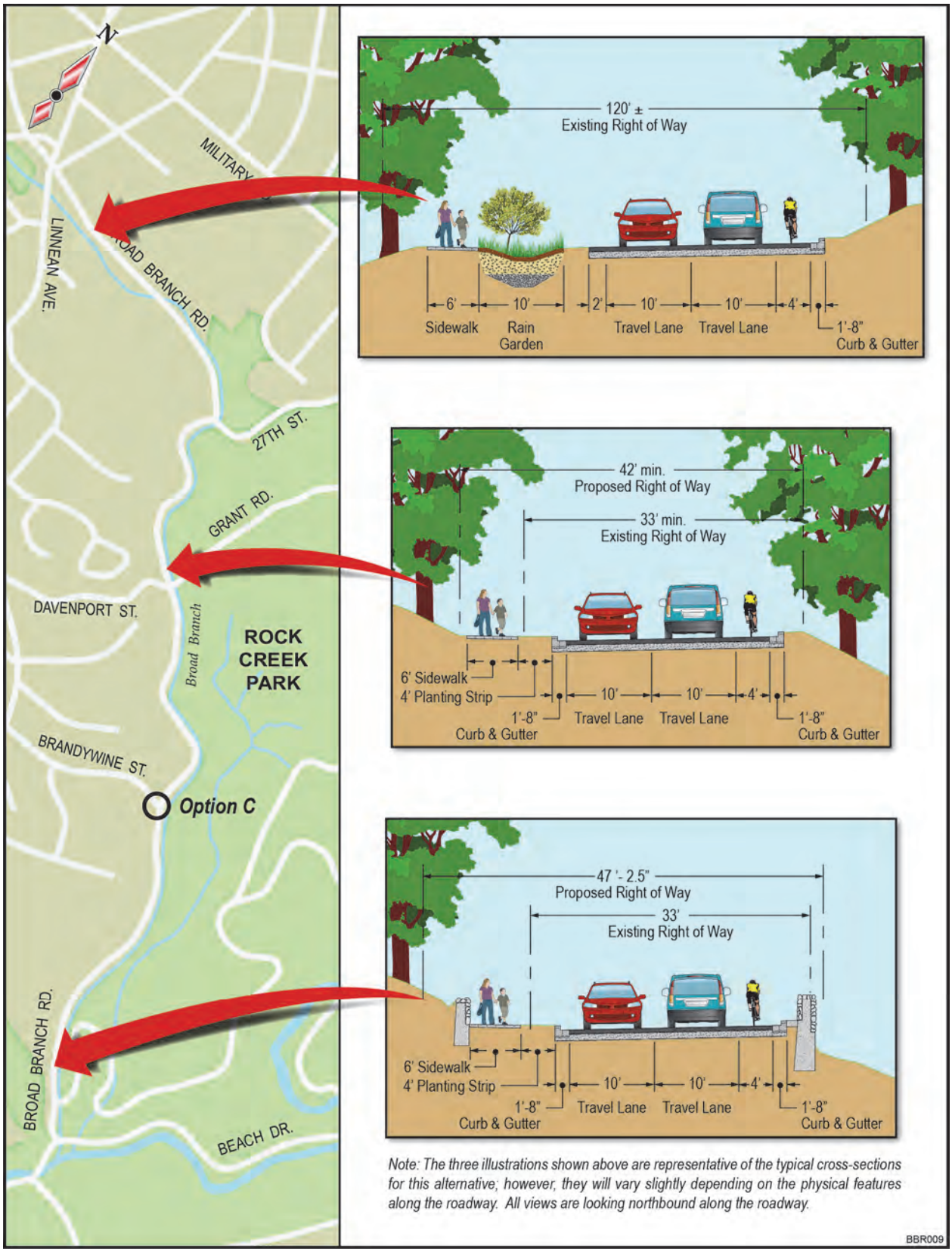


Figure 2-9. Candidate Build Alternative 4 – Typical Sections

Table 2-3. Retaining Walls – Candidate Build Alternative 4 (measurements in feet)

WEST SIDE						EAST SIDE					
SEGMENT	START	END	HEIGHT	VISIBLE HEIGHT	LENGTH	SEGMENT	START	END	HEIGHT	VISIBLE HEIGHT	LENGTH
R1W	26+14	27+69	6.25	6.25	153.69	R1E	18+50	19+57	2.50	2.50	104.82
R2W	28+17	28+73	8.00	8.00	55.95	R2E	29+55	30+05	13.00	6.50	100.65
	28+73	29+61	11.75	11.75	86.66	R3E	31+95	34+45	10.25	5.25	257.59
	29+61	30+40	6.25	6.25	78.34	R4E	38+00	38+35	10.00	4.00	35.34
R3W	33+08	36+06	8.00	8.00	273.49	R5E	39+56	40+35	14.75	4.00	79.77
	36+06	38+86	3.00	3.00	296.31	R6E	44+37	45+00	15.75	5.25	59.36
	38+86	39+12	5.50	5.5	25.86	R7E	45+59	46+09	16.50	4.75	47.18
R4W	39+25	39+96	8.25	8.25	72.27	R8E	46+45	49+65	16.25	5.00	316.62
R5W	42+21	42+42	8.00	8.00	14.97	R9E	53+24	55+05	13.25	4.50	182.01
R6W	43+95	44+82	10.00	10.00	99.16	R10E	57+52	57+93	12.00	4.50	34.91
R7W	46+26	47+56	8.25	8.25	134.63	R11E	65+38	65+69	13.25	4.50	31.34
	47+56	48+86	15.75	15.75	131.47	R12E	66+19	66+59	17.25	4.50	37.84
R8W	51+02	51+30	6.50	6.50	28.70	R13E	68+80	71+10	14.25	5.00	226.08
	51+30	52+22	13.00	13.00	87.85	R14E	76+69	77+16	11.50	4.00	46.77
	52+22	52+43	7.75	7.75	19.24	R15E	77+39	78+90	12.75	5.25	152.35
R9W	52+63	53+85	7.50	7.50	119.27	R16E	80+55	80+70	10.00	4.50	14.90
	53+85	55+23	12.50	12.50	137.51	R17E	81+00	81+90	11.25	5.00	87.82
	55+23	56+47	6.00	6.00	116.36	R18E	82+55	83+50	8.75	4.50	92.60
R10W	60+02	65+63	6.50	6.50	519.02	R19E	83+90	84+39	7.50	4.25	48.69
R11W	67+61	68+55	7.25	7.25	95.73	R20E	85+15	88+24	9.50	5.75	307.67
R12W	68+95	69+69	3.00	3.00	74.26	R21E	90+61	91+40	13.75	6.25	79.20
	69+69	72+75	8.25	8.25	305.88						
R13W	73+28	77+44	2.50	2.5	403.37						
	77+44	78+40	6.25	6.25	92.20						
	78+40	79+26	11.00	11.00	86.64						
	79+26	81+81	6.50	6.50	258.95						
R14W	82+05	82+84	5.75	5.75	82.62						
	82+84	85+50	13.75	13.75	272.50						
	85+50	86+15	6.25	6.25	65.00						
R15W	86+57	87+20	5.00	5.00	62.67						
R16W	87+46	88+34	6.00	6.00	88.76						
	88+34	90+87	13.75	13.75	253.53						
	90+87	91+71	9.00	9.00	82.74						
Total Length					**4,675.59**						**2,343.52**

Similar to Candidate Build Alternatives 2 and 3, the wall segments are required to meet current design criteria. The majority of walls proposed on the east side of the roadway would be located within several feet of or partially overlap the footprint of existing stone walls. Several of these walls are contributing resources to the Rock Creek Park Historic District and traverse both DDOT and NPS property. DDOT will conduct necessary engineering studies, including stability analysis and wall crash rating analysis, to assess the condition of existing walls. The

information will be used to determine whether new walls will need to be constructed to replace existing walls or whether existing walls can be restored and stabilized in their existing location to meet design standards. Where replacement structures are required, DDOT will construct the new walls within the existing wall's footprint. DDOT will also examine feasible methods to tie new walls into existing walls while ensuring structural stability and safety. Where existing walls cannot be restored, stone from the walls will be retained for potential reuse in the construction of new walls.

Drainage and Stormwater Management. Stormwater management upgrades are similar to those identified in Candidate Build Alternatives 2 and 3, and will include improvements to existing outfalls. Like Candidate Build Alternatives 2 and 3, Candidate Build Alternative 4 includes replacement of the Soapstone Creek Culvert. The replacement of the Soapstone Creek Culvert will be the same in form, pattern, materials, and color as identified for Candidate Build Alternatives 2 and 3; however, the structure will be slightly wider over Soapstone Creek. The concrete strip footing foundations on which the precast concrete arch rests will be approximately 45 feet long and the road deck over Soapstone Creek for Alternative 4 will be approximately 29 feet in width to accommodate the six-foot sidewalk on the west side of Broad Branch Road (the same roadway width as Alternative 3).

Option C. T-Intersection at Brandywine Street. A new T-intersection is proposed at Brandywine Street to replace the existing forked Y-intersection. The intersection design is very similar to that described in Option C for Candidate Build Alternative 3. Proposed sidewalks on both sides of Brandywine Street in this alternative would connect to the sidewalks proposed for the western side of Broad Branch Road in Candidate Build Alternative 4. The design also includes wheelchair accessible ramps/aprons, and a crosswalk.

Project Cost and Duration. The total estimated project cost for Alternative 4 is $37.1 million. The approximate construction duration is 36 months.

2.4 ALTERNATIVES ELIMINATED FROM CONSIDERATION

During the alternatives development process, several alternative strategies and concepts were considered but eliminated, as described further in the following section.

2.4.1 ROADWAY ALTERNATIVES

During the collaborative alternatives development process, the study team worked with stakeholders and the public to develop a range of alternatives that incorporate elements to address each of the project's needs. Alternative concepts that were considered but then dismissed from consideration included potential widening to increase vehicular capacity, upgrading the roadway to typical collector roadway design standards, raising the roadway profile above the 10-year floodplain, changing the roadway from a two-way to a one-way roadway to allow space for cyclists, and the provision of a shared use path or bicycle lane on the west side of Broad Branch Road.

Improvements to **increase vehicular capacity** were dropped from consideration as current and future travel demands do not indicate a need for additional capacity. Traffic volumes are

projected to remain below 5,000 vehicles per day (vpd). Similarly, Traffic Demand Management (TDM) strategies and transit alternatives for this low-capacity roadway were also eliminated from further consideration.

Upgrading Broad Branch Road to typical **collector roadway design standards** and **raising the roadway profile** were eliminated from consideration early in the study due to the potential impacts on Rock Creek Park and the adjacent residences. Collector roadways are typically designed using a 35 mph design speed (minimum 30 mph) with 12-foot travel lanes and grades less than 4%. Findings from alignment and profile studies suggest that major earthwork and extensive regrading with frequent use of retaining walls would be required to achieve these design standards and to raise the road above the 10-year floodplain. Such improvements would not be in keeping with the topography and character of the local setting, and given the relatively low traffic volumes on the roadway (under 5,000 vpd), they were dismissed from further consideration. A 25 mph design can be achieved in the roadway corridor, and when combined with traffic calming measures, speeds can be controlled to address the project's safety concerns.

The proposal to alter the roadway from a two-way to a **one-way roadway** was first considered as part of a DDOT feasibility study conducted more than 10 years ago. One travel lane would be removed to allow for the incorporation of bicycle and pedestrian facilities. The concept received considerable support for its incorporation of the other modal elements, however, resulted in potential lengthy, circuitous travel for autos. Entry to Broad Branch Road would be limited to the northern or southern terminus and as such causes extended travel to reach the entry points. One-way travel also poses problems for travelers who miss turns to intersecting roadways or drives – resulting in a nearly two-mile trip to return to the turning point. After much consideration, the one-way concepts were dismissed again.

The provision of a **shared-use path** on the west side of Broad Branch Road was eliminated because it was determined that separate bicycle and pedestrian facilities better met safety and connectivity objectives for these facilities. Provision of a **bicycle lane** in both travel directions was also eliminated because it would not allow sufficient space for a separation between the roadway and the sidewalk which is consistent with pedestrian safety objectives and the context of the project setting.

3 AFFECTED ENVIRONMENT

Existing environmental conditions were identified and mapped within the project corridor. These environmental considerations are based on guidelines established by the Federal Highway Administration (FHWA) Technical Advisory T 6640.8A – *Guidance for Preparing Environmental and Section 4(f) Documents* and the National Park Service (NPS) Director's Order #12 - *Conservation Planning, Environmental Impact Analysis, and Decision-Making*. The environmental data and findings presented herein were gathered from federal, state, and local agencies; previous area studies; various existing literature and websites (see Chapter 8 References); aerial photography; and field surveys of the project area.

3.1 NATURAL RESOURCES

3.1.1 GEOLOGY, SOILS, AND TOPOGRAPHY

GEOLOGY

This project is located in the Piedmont province on the edge of the Coastal Plains province. The region is made up of late Proterozoic and Paleozoic igneous rock (formed by molten rock that has come to the surface and cooled) and metamorphic rock (physically and/or chemically changed due to heat and pressure) that has been strongly weathered and is buried under 2 to 20 meters of soil. The metamorphic rock is very complex due to the number of times it has been altered and often contains mineral deposits including gold, talc, kyanite, slate, and feldspar (William and Mary, Department of Geology 2013).

The project crosses the boundary of two of the US Environmental Protection Agency's (EPA) Level IV Ecoregions: the Piedmont Uplands (Ecoregion 64c) in the northwestern end, and the Chesapeake Rolling Coastal Plain (Ecoregion 65n) in the southeastern end (Woods, et al., 2003). Ecoregions designate areas of general similarity in wildlife and vegetation communities; and in the type, quality, and quantity of environmental resources.

The Piedmont Uplands (part of the Piedmont, a Level III Ecoregion) is composed of hills, irregular plains, and isolated ridges. Ultisol formations are common and have developed from weathered parent material; they are typically clay-rich, acidic, and relatively low in base saturation. Streams have silt, sand, gravel, and rubble-bottom materials and bedrock is only occasionally exposed. Differences in stream gradient, due to topography, greatly affect fish habitat (Woods, et al., 2003).

The Chesapeake Rolling Coastal Plain (part of the Southeastern Plains, a Level III Ecoregion) is a rolling, hilly, dissected portion of the Inner Coastal Plain that is made up of sedimentary material. Stream margins can be swampy and stained water can occur. Parts of the Fall Zone

are included in the westernmost portion of the Rolling Coastal Plain; here aquatic habitats vary between the islands, pools, swampy streams, and cascades (Woods, et al., 2003).

SOILS

Analysis of soil maps within 500 feet of Broad Branch Road reveals that the majority of the soils have a moderate to high erosion potential, as described in **Table 3-1**. The majority of the areas where construction is expected to occur have been previously disturbed and are considered urban or cut/fill land. These locations are not rated for characteristics of concern for sensitive soil types.

Table 3-1. Soil Types within 500 feet of Broad Branch Road

SOIL TYPE	PERCENT OF CORRIDOR	DESCRIPTION	CONSTRUCTION LIMITATIONS	HYDROLOGIC SOIL GROUP
Ashe loam (AsD) 15-40% slopes	29.7	Somewhat excessively drained soil that occurs on ridge tops and side slopes in strongly dissected areas of the Piedmont Plateau. High erosion potential.	Very limited due to slope, frost action, and depth to bedrock	B
Brandywine - Urban Land Complex (BtC) 8-15% slopes	0.1	Brandywine soils that have been graded or otherwise altered for residential, commercial, or industrial development. Moderate to high erosion potential.	Somewhat limited due to slope, frost action, and depth to bedrock	A
Brandywine - Urban Land Complex (BtD) 15-40% slopes	10.9	Brandywine soils that have been graded or otherwise altered for residential, commercial, or industrial development. Severe erosion potential.	Very limited due to slope, frost action, and depth to bedrock	A
Codorus silt loam (Ck)	1.2	Moderately well-drained soil that occurs on ridgetops and sideslopes in strongly dissected areas of the Piedmont Plateau. Severe erosion potential.	Very limited due to frost action, flooding, and depth to saturation	C
Cordorus-Urban land complex (Cn)	12.0	Moderately well-drained soil that has been graded or otherwise altered for residential, commercial, or industrial development. Moderate to high erosion potential, occasional flooding potential.	Not rated	D
Glenelg-Urban land complex (GhB) 0-8% slopes	1.3	Well-drained soils that have been graded or otherwise altered for residential, commercial, or industrial development. Moderate to high erosion potential.	Not rated	B
Manor loam (MbC) 8-15% slopes	0.3	Well-drained to somewhat excessively drained soil that occurs on ridgetops and sideslopes in strongly dissected areas of the Piedmont Plateau. Moderate to high erosion potential.	Somewhat limited due to frost action and low strength	B
Manor loam (MbD) 15-40% slopes	26.3	Well-drained to somewhat excessively drained soil that occurs on ridgetops and sideslopes in strongly dissected areas of the Piedmont Plateau. Severe erosion potential.	Very limited due to slope and frost action	B
Manor - Urban Land Complex (MdC) 8-15% slopes	0.2	Well-drained to somewhat excessively drained Manor soils, most areas of which have been graded, cut, filled, or otherwise disturbed during urbanization. Severe erosion potential.	Somewhat limited due to slope, frost action, low strength, and depth to bedrock	B

SOIL TYPE	PERCENT OF CORRIDOR	DESCRIPTION	CONSTRUCTION LIMITATIONS	HYDROLOGIC SOIL GROUP
Manor - Urban Land Complex (MdD) 15-40% slopes	8.7	Well-drained soils that have been graded or otherwise altered for residential, commercial, or industrial development. Very severe erosion potential.	Very limited due to slope, frost action, and depth to bedrock	B
Neshaminy-Urban land complex (NuD) 15-40% slopes	2.7	Well-drained soils that have been graded or otherwise altered for residential, commercial, or industrial development. High erosion potential.	Somewhat limited due to slope and frost action	B
Udorthents, loamy (U4)	6.1	Well drained soil that occurs on ridgetops and sideslopes in strongly dissected areas of the Piedmont Plateau. High erosion potential.	Somewhat limited due to slope	C
Water	0.4		Not rated	

Source: USDA, 2013

The rating for the project corridor soils for building local streets is approximately 80 percent "very limited" and seven percent "somewhat limited." These ratings indicate that there are one or more factors that should be taken into consideration when used for that specified purpose. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance of the soil can be expected if these steps are taken (USDA, 20013).

TOPOGRAPHY

Topography on and adjacent to the project corridor is dominated by low, rolling hills. Some sharper changes in topography exist along streams where erosion has removed the topsoil and exposed the bedrock. For the majority of the alignment, Broad Branch Road is located alongside Broad Branch stream in the stream's valley. Steep grades on the side of the road opposite the stream, increase stormwater velocity as the runoff flows downward from adjacent hillsides and neighborhood streets, across Broad Branch Road, and into Rock Creek Park. Unimpeded, the high velocity causes erosion as it leaves the pavement. This erosion exposes and degrades roadway infrastructure and removes soil, making it difficult for plants to root and grow. Deep stream erosion results in deteriorated habitat and unstable banks.

AGRICULTURAL LANDS, PRIME AND UNIQUE FARMLAND SOILS

In recognition of the need to identify and preserve lands that are important for the production of the nation's food supply and major cash crops, the Natural Resources Conservation Service (NRCS) and the federal, state and local governments have coordinated to inventory important farmlands. Important farmlands fall into two nationwide categories, Prime and Unique Farmland, and can also be recognized on the state or local levels as Farmland of State or Local Importance.

The project is located in a highly urbanized area that has already been developed or designated as park land. There is no mapped Prime or Unique Farmland in the project vicinity, and none of the land within the project area is available to be farmed. In addition, no Agricultural or Forestal Districts occur in the project vicinity.

3.1.2 WATER RESOURCES

Section 404 of the Federal Water Pollution Control Act of 1972, also referred to as the Clean Water Act (CWA), provides protection for Waters of the United States (WOUS). WOUS can be generally defined as all navigable waters and waters that have been or can be used for interstate or foreign commerce, their tributaries, and any waters that, if impacted, could affect the former, including wetlands. Broad Branch and Soapstone Creek are WOUS in the project area and are discussed further in the following subsection on Surface Waters. Impacts to wetlands are considered separately from other WOUS for permitting processes. For this reason, existing wetlands and open waters will be addressed independently of streams in this analysis.

Water resources are regulated by several federal and local laws and regulations in addition to the CWA, including the Code of Federal Regulations (CFR) Part 122.26 – Storm Water Discharges; Safe Drinking Water Act (SDWA) of 1974; DC Water Pollution Control Act of 1984; DC Storm Water Permit Compliance Amendment Act of 2000; and Title 21 of DC Municipal Regulations (Chapter 11- Water Quality Standards and Chapter 19 – Water Quality Monitoring Regulations). Construction projects can affect ecosystems and water quality by eliminating resources, increasing runoff, adding pollutants, and altering hydrology.

Broad Branch Road crosses several water resources, as depicted in **Figure 3-1**. These features are discussed in greater detail below.

DRINKING WATER AND GROUNDWATER

In 1974, the SDWA was passed by Congress to regulate the public drinking water supply. The 1996 Amendments mandate that states assess, delineate, and map protection areas for their public drinking water sources and determine potential risks to those sources. Source water protection is not specifically mandated by the SDWA; however, states, tribes, and communities are encouraged to use this information to protect the sources from pollution of major concern and may pass local regulations (EPA, 2004). The project area is serviced by public water and there are no private wells or source waters located along the project corridor. No sole source aquifers are located in the project vicinity.

Groundwater of the Piedmont Physiographic Province occurs in crystalline-rock aquifers, which consist of bedrock overlain by unconsolidated material called regolith. Due to the low permeability of the underlying bedrock, water is generally found in the regolith layer or along fractures in the rock. Recharge areas generally include the entire land surface, except for lower parts of valleys where it discharges in seeps, springs, and baseflow for streams such as Broad Branch.

The project is located in a stream valley with recharge areas uphill to the east (Rock Creek Park) and to the north and the west (lawns and undeveloped areas). The entire western side of the project area and the eastern side in the northern end is urban residential or institutional with a moderate amount of impermeable surface, which does not allow for as much rainwater to recharge naturally. Excess stormwater flows unchecked and unfiltered directly into the local stream system.

Soapstone Creek upstream from Broad Branch Road

Broad Branch Floodplain (view from Beach Drive)

BBR_049

Figure 3-1. Water Resources

SURFACE WATER

The project corridor runs parallel to and crosses Broad Branch, a perennial stream with a mapped 100-year floodplain. This stream is classified as riverine, upper perennial, unconsolidated bottom (R3UB) by the Cowardin Classification System (Cowardin, et al. 1979). Several tributaries to Broad Branch are also crossed by the alignment, including Soapstone Creek. Most of the streams that feed Broad Branch, including the upstream portion of Broad Branch itself, are currently completely culverted until their confluence with Broad Branch. Prior to urbanization, the streams in this area were spring-fed headwater intermittent streams that conveyed water for the majority of the year. These streams would likely be classified under the Cowardin Classification System as riverine, intermittent, streambed (R4SB), if above ground.

Increased impervious surfaces, culverted streams, and lack of stormwater mitigation have led to water volumes and velocities during storm events that are too high for the existing natural channels to convey. As a result, erosion has occurred, damaging infrastructure and affecting sensitive habitats downstream.

FLOODPLAINS

The project area is located in the Federal Emergency Management Agency (FEMA)-mapped 100-year floodplain for Broad Branch. Erosion from additional stormwater has deteriorated infrastructure along the project area and stream bank stability. Flooding in April 2011 resulted in large sink holes and culvert failure in the roadway at the crossing of Soapstone Creek. A temporary emergency replacement for the culvert is currently in place; a permanent solution is incorporated in the Candidate Build Alternatives for this project.

WATER QUALITY

According to *Title 21 of the DC Municipal Regulations, Chapter 11, Water Quality Standards as amended October 4, 2005*, tributaries to Rock Creek are considered Special Waters of the District of Columbia (SWDC). Waters designated as SWDC have quality better than needed for their current use or have scenic or aesthetic importance and shall be maintained at or above the existing level. All streams located in the project vicinity are tributaries to Rock Creek.

In compliance with Sections 303(d), 305(b) and 314 of the federal CWA and the SWDA, it is the responsibility of the states to develop a prioritized list of water bodies that currently do not meet water quality standards. The 303(d) list includes those water bodies and watersheds that exhibit levels of impairment requiring investigation and restoration.

The Environmental Protection Agency (EPA) lists Broad Branch as impaired due to high levels of fecal coliform. The Rock Creek Watershed Implementation Plan lists both Soapstone Creek and Broad Branch as exceeding Total Maximum Daily Loads (TMDL) for organics and fecal coliform (District Department of the Environment [DDOE], 2010e). Additionally, a study referenced in the Rock Creek Watershed Implementation Plan, which was conducted in 1993, found Broad Branch to be moderately impaired and Soapstone Creek to be severely impaired, based on an analysis of both biological and physical characteristics of the streams.

TMDL are the determined maximum amount of a pollutant that a water body can contain and still meet applicable water quality standards. While no TMDLs exist for nitrogen, phosphorus, or total suspended solids (TSS) in the District portion of the Rock Creek watershed, the District is still committed to reducing total nitrogen, phosphorous, and TSS loads in accordance with the Chesapeake Bay Agreement. Organics include chlordane, dichlorodiphenyltrichloroethane (DDT) and the compounds formed from its breakdown (DDD and DDE), dieldrin, heptachlor, epoxde, and various polycyclic aromatic hydrocarbons (PAH); all of which are found in Broad Branch and Soapstone Creek (DDOE, 2012).

Impairment of local water quality is attributed in large part to uncontrolled runoff that is causing erosion and allowing for roadway contaminants to flow directly into adjacent streams. As water flows over impervious surfaces it collects dirt, rubber and metals from tires, fluids that have dripped from vehicles onto the pavement, pesticides and fertilizers from lawns, and discarded litter. Left untreated these pollutants enter into the local water systems. This area also suffers from degraded sewers which are leaking into the local water systems.

WETLANDS

Wetlands provide valuable habitat for fish and wildlife; improve water quality; perform important hydrologic functions, such as regulating storm flow; maintain food chain and nutrient cycling functions; serve socioeconomic roles; and may support rare and endangered species. Executive Order 11990, Protection of Wetlands, mandates that each federal agency take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance their natural values.

Wetlands are currently defined by the U.S. Army Corps of Engineers (USACE) (33 CFR 328.3[b]) and the EPA (40 CFR 230.3[t]) as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

There are no wetlands located in the project area according to National Wetlands Inventory (NWI) maps.

NAVIGABLE WATERS

The Potomac River, downstream of the project area, is a traditional navigable water. Soapstone Creek and Broad Branch are perennial tributaries to this traditional navigable water and as such are, by definition, Waters of the US. No waters in the immediate project vicinity are designated as navigable waters.

WILD AND SCENIC RIVERS

In 1968, Congress passed the Wild and Scenic Rivers Act to preserve rivers with outstanding natural, cultural, and recreational values in a free-flowing condition. In accordance with this law, federal projects are prohibited from supporting actions such as dams or other in-stream activities that would impact a river's free-flowing condition, water quality, or other outstanding resource values.

According to the National Park Service, no Wild or Scenic Rivers are located in the project vicinity; however, Rock Creek, from the Porter Street Crossing to the Maryland border (downstream from the project area), is listed on the National Rivers Inventory (NRI) for recreational and historic values. Rivers on the NRI list are free-flowing rivers that possess one or more Outstandingly Remarkable Values (ORVs) and that could potentially qualify as national wild, scenic, or recreational rivers (NPS, 2009a).

COASTAL ZONE

Federal actions occurring within or with the likelihood to affect any land or water use, or natural resource of a state's coastal zone, including cumulative and secondary effects, must be consistent with a state's federally approved Coastal Zone Management Plan (CZMP) according to Section 307 of the Federal Coastal Zone Management Act of 1972, as amended (CZMA), and National Oceanic and Atmospheric Administration (NOAA) regulations (15 CFR part 930).

The District of Columbia does not have a designated Coastal Zone and has not developed a Coastal Zone Management Plan under the Coastal Zone Management Act. The Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), however, amended the CZMA to clarify that federal consistency requirements apply when any federal activity, regardless of location, affects any land or water use or natural resource of the coastal zone.

CHESAPEAKE BAY PROTECTION

The District has been a partner of the EPA's Chesapeake Bay Program since its inception in 1983. President Obama's Executive Order in 2009 on the Chesapeake Bay included goals for restoring clean water by reducing nitrogen, phosphorus, sediment, and other pollutants; recovering habitat by restoring a network of land and water habitats to support priority species and other public benefits; sustaining fish and wildlife; and conserving land and increasing public access.

The District achieved its goal of reducing the controllable portion of nitrogen and phosphorus by 40 percent. In June of 2000, partners of the Chesapeake Bay Program adopted a new agreement in which the District plans to further reduce nutrient loading and control sediment by limiting its contribution of pollutants to 2.4 million pounds/year of nitrogen, 0.34 million pounds/year of phosphorus, and 0.006 tons/year of sediment (DDOE, 2011).

MARINE AND ESTUARINE RESOURCES

There are no marine or estuarine resources located in the project vicinity.

3.1.3 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

Wildlife in the project area includes species adapted to urban/suburban conditions as well as some more secretive species in Rock Creek Park, such as raccoons, whitetail deer, turtles, eastern grey squirrels, red fox, grey fox, coyote, and a number of common bird species. Green areas on the west side of the roadway consist of mainly fragmented urban forest which provides moderately valuable habitat for wildlife.

Rock Creek Park provides habitat for at least one federally-listed endangered species, Hay's Spring Amphipod (*Stygobromus hayi*), an endemic amphipod in springs and groundwater within the park. Communication with park officials indicate that the closest known population is approximately three quarters of a mile northeast of the southern end of Broad Branch Road and is not in the Broad Branch tributary watershed (Yeaman, 2013). Consultation with the U.S. Fish and Wildlife Service (USFWS) confirms that no other proposed or federally listed endangered or threatened species are known to exist within the immediate project area (LaRouche 2013).

WILDLIFE AND WATERFOWL REFUGES

No wildlife or waterfowl refuges are located in the project vicinity.

ANADROMOUS FISH, TROUT WATERS, AND SHELLFISH

According to Rock Creek Park natural resources specialists, suitable habitat conditions for spawning anadromous fish exist within Broad Branch adjacent to the project area; however, anadromous fish are only able to travel as far as the insurmountable box culvert that carries Beach Drive over the Broad Branch stream, downstream of the project area (Yeaman, 2011). Rock Creek does not support trout and there are no shellfish of concern within the project vicinity (Rock Creek Park, 2010).

3.1.4 VEGETATION

Rock Creek Park is the only large area of mostly contiguous deciduous forest habitat in the District metropolitan area, and the adjacent forests play a major factor in defining the character of Broad Branch Road. The Broad Branch Road right-of-way is owned by the District of Columbia, but lands adjacent to the roadway on much of the eastern edge of the alignment are administered by NPS.

As with all NPS units, management of the park is guided by numerous congressional acts and executive orders, in addition to the enabling legislation. Some of these laws and executive orders are applicable primarily to units of the national park system. These include the 1916 Organic Act creating the NPS and the General Authorities Act of 1970 relating to the management of the national park system.

The Organic Act created the NPS in 1916. This act defines the NPS' mission to "conserve the scenery and the natural and historic objects and the wildlife [in national parks, monuments, and reservations] and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Protection of the deciduous forest has been a long-term management goal at Rock Creek Park. Protection has included such actions as minimizing or avoiding clearing of trees, suppressing wildfires, and controlling the presence and distribution of invasive species.

The 1890 legislation establishing Rock Creek Park states that the area is to be “perpetually dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States.” It specifies that the park is to “provide for the preservation from injury or spoliation of all timber, animals, or curiosities within said park, and their retention in

their natural condition, as nearly as possible." It directs park managers to provide for public recreation, specifically to "lay out and prepare roadways and bridle paths, to be used for driving and for horseback riding, respectively, and footways for pedestrians."

The majority of the land along the Broad Branch Road alignment has been previously disturbed. Green areas on the west and north (residential) sides of the roadway consist of landscaped lawns with shrub and tree privacy strips adjacent to the road and larger lots of fragmented urban forest. The east (park) side of the roadway is forested. Sections of the area have been disturbed by roadway, trail, and utility construction and maintenance. Invasive, non-native grasses and herbaceous vegetation are present.

TREES AND SHRUBS

The forested areas along the east side of the roadway corridor are mostly dominated by mixed oak and beech with May apples, in addition to a few patches of chestnut oak and sycamore (NPS, 2009b). Trees vary in age, size and condition as a result of the various roadway and utility maintenance operations over the years (see **Figure 3-2**). These activities have required the periodic removal and trimming of trees and occasionally have harmed root systems, which has led to the declining health of some individual trees. A tree survey was conducted along the roadway corridor as part of the roadway survey. The tree survey documented species, health, and size for trees greater than 4 inches in diameter. The inventory will be used to determine the potential impact (direct and indirect) to trees adjacent to the roadway and help determine the level of replacements required to mitigate any loss (see **Chapter 4**).

INVASIVE SPECIES

Invasive species are non-native plant, animal, or microbial species that cause, or have the potential to cause, economic or ecological harm or harm to human health (Presidential Executive Order 13112). Seeds and propagules of invasive species may be transported from one place to another on construction equipment that has not been properly cleaned before transport. Disturbed areas are also easily colonized by invasive species if not properly seeded with a cover crop after earthwork has been completed.

Rock Creek Park is exposed to continuous threats from aggressive and exotic invasive plant species due to its proximity to urban development. According to park officials, over 30 percent of the approximately 650 species of plants that have been identified in the park are introduced. Similarly, the forested areas adjacent to the roadway already support several invasive species and are susceptible to additional invasive species as well.

UNIQUE ECOSYSTEMS, BIOSPHERE RESERVES, WORLD HERITAGE SITES

According to the United Nations online list of World Heritage Sites and Biosphere Reserves and conversations with Rock Creek Park staff, there are no Unique Ecosystems, Biosphere Reserves, or World Heritage Sites located within the project vicinity (UNESCO, 2010; Rock Creek Park, 2010).

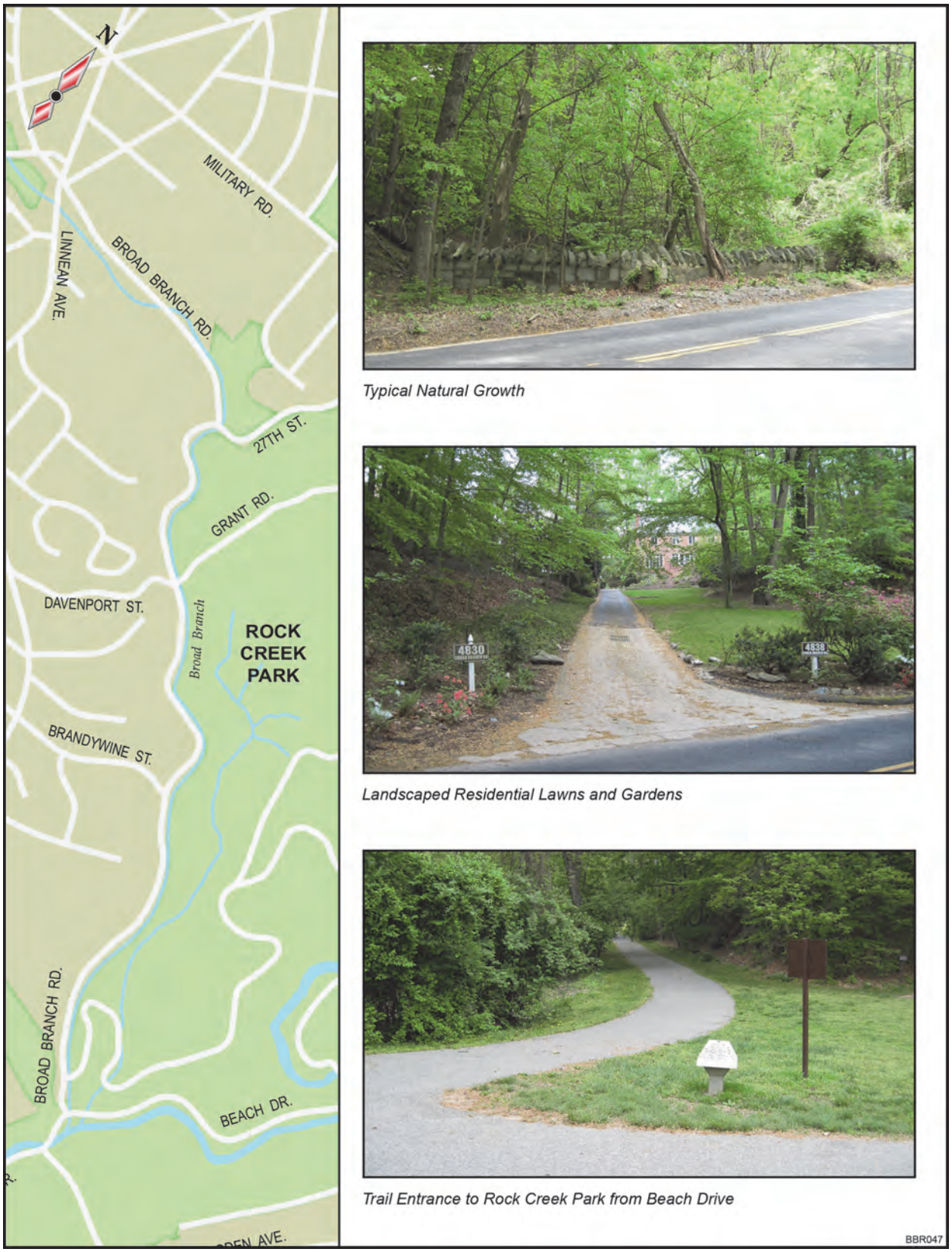


Figure 3-2. Landscapes in the Project Area

3.2 CULTURAL AND PALEONTOLOGICAL RESOURCES

Cultural and paleontological resources include four major groups of resources: prehistoric and historic archaeological, architectural, Native American, and paleontological resources. Cultural resources are prehistoric and historic sites, structures, districts, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for traditional, religious, scientific, or any other reason. Paleontological resources are the physical remains, impressions, or traces of plants or animals from a former geologic age and are not associated with human activity. Cultural resources are discussed here in terms of archaeological resources, including both prehistoric and historical occupations; historic structures; cultural landscapes; ethnographic resources; museum collections; and Indian Trust Resources and Native American sacred sites, including Traditional Cultural Properties. Paleontological resources are discussed as a separate category.

Procedures for the identification, evaluation, and treatment of cultural resources are contained in a series of federal and state laws and regulations and agency guidelines. Archaeological, architectural, and Native American resources are protected by a variety of laws and their implementing regulations: the National Historic Preservation Act (NHPA) of 1966, as amended in 2006; the Archeological and Historic Preservation Act of 1974; the Archaeological Resources Protection Act (ARPA) of 1979; the American Indian Religious Freedom Act (AIRFA) of 1978; and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990. The Advisory Council on Historic Preservation (ACHP) further guides treatment of archaeological and architectural resources through the Protection of Historic Properties (36 CFR 800) regulations.

The improvements for Broad Branch Road involve the use of federal funding, permitting, and licensing (36 CFR 800.16(y)). FHWA is the lead federal agency; therefore, the project is under the purview of Section 106 of the NHPA. Section 106 of the NHPA governs federal actions that could affect historic properties. Historic properties are the subset of cultural resources listed in or eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 requires federal agencies to take into account the effects of their undertakings, including licensing and approvals, on NRHP-eligible resources and to afford the ACHP and other interested parties a reasonable opportunity to comment.

The significance of historic properties is judged by the property's ability to meet the four criteria for inclusion in the NRHP (36 CFR 60.4):

- Association with events that made a significant contribution to the patterns of our history;
- Association with the lives of persons significant in our past;
- Sites that embody characteristics of a type, period, or methods of construction or that represent the work of a master, possess high artistic value, or represent a distinguishable entity; or
- Have yielded, or may be likely to yield, information important to prehistory or history.

Properties may be eligible for the NRHP for contribution at the national, state, or local level. In order for a structure to be listed in the NRHP, it must possess historic integrity of those features necessary to convey its significance in accordance with NRHP guidelines; these include location, design, setting, workmanship, materials, feeling, and association.

3.2.1 Area of Potential Effects

The Area of Potential Effects (APE) was established in coordination with the District of Columbia Historic Preservation Office (DC SHPO). As defined by 36 CFR 800.16(d) of Section 106 of the NHPA, the APE represents the "…geographic area or areas within which an undertaking could cause changes in the character or use of historic properties, if any such exists."

District Department of Transportation (DDOT) in consultation with the District Historic Preservation Office (in a meeting on August 16, 2011) has defined the APE boundaries as the east bank of Broad Branch between Beach Drive and 27th Street NW; the first row of structures north of Broad Branch Road between 27th Street NW and Nevada Avenue NW; several residences south of Broad Branch Road along Linnean Avenue; and the first row of residences west of Broad Branch Road between 27th Street NW and Beach Drive. This APE is considered sufficient to include all proposed repairs or modifications to Broad Branch Road, to incorporate any possible construction staging areas, to accommodate any modifications and/or replacement of the Soapstone Creek Culvert, and to assess any visual or audible intrusions. A map of the defined APE is presented in **Appendix C**.

3.2.2 Archaeological Resources

Archaeological resources include both prehistoric and historic resources. Prehistoric resources are physical properties resulting from human activities predating written records. These archaeological sites are the loci of human behavior as indicated by concentrations of artifacts, features, or floral and faunal remains. Prehistoric land use patterns were more closely related to local environmental conditions than are most modern settlements. Historic resources are physical properties that post-date the existence of written records and include features such as trails, roadbeds, building foundations, and refuse concentrations.

No archaeological investigations have been conducted within the project area; however, archaeological studies have been conducted in adjacent Rock Creek Park since W.H. Holmes excavations at Piney Branch Quarry in 1889 (Moran 1997). These archaeological investigations include a survey of 31 erosion control and bank stabilization sites along Rock Creek (Inashima 1985) and a four-year study of Rock Creek Park covering areas immediately adjacent to the project area (Bedell et al. 2008; Fiedel et al. 2004, 2005, 2006, 2008). The Phase I survey techniques used in the four-year study included reconnaissance survey, metal detector survey, and shovel testing using both judgmental and systematic sampling strategies (Fiedel et al. 2008).

Six sites were identified within 500 feet of Broad Branch during previous archaeological investigations: 51NW169, 51NW172, 51NW183, 51NW184, 51NW185, and 51NW194 (**Table 3-2**). Three sites have been determined eligible for listing in the NRHP; three have not been evaluated for NRHP eligibility. One archaeological (site 51NW169), an unnamed Civil War

battery is located within the project area. Archaeological deposits related to the unnamed Civil War battery are not likely to occur beneath Broad Branch Road as the road was constructed in 1839 prior to construction of any Civil War defenses. The remaining archaeological sites are situated on the terraces above Broad Branch and none are located within the DDOT right-of-way.

Table 3-2. Archaeological Resources within 500 feet of the Broad Branch Road Project Area

SITE NUMBER	SITE NAME	SITE TYPE	NRHP ELIGIBILITY
51NW169	Unnamed Battery	Civil War battery	Contributing element to the Civil War Fort Sites and Fort Circle Park System Historic District
51NW172	Broad Branch site	Prehistoric lithic scatter	Not evaluated
51NW183	Jane Dickson Site	19th century tenancy	NRHP-eligible
51NW184	J.W. Willis Site	19th century farmstead	Not evaluated
51NW185	Sara Whitby Site	19th century tenancy	NRHP- eligible
51NW194	Broad Branch Quarry	19th century	Not evaluated

CIVIL WAR FORT SITES AND FORT CIRCLE PARK SYSTEM HISTORIC DISTRICT

The Civil War Fort Sites and Fort Circle Park System Historic District consists of the locations of forts, batteries, and rifle trenches comprising the Civil War Defenses of Washington constructed between 1861 and 1865 (CEHP, Inc. 2004; **Figure 3-3**). By 1865, the Defenses of Washington included 68 forts, 93 detached batteries for field guns, 20 miles of rifle pits and covered ways, three wooden blockhouses, 32 miles of military roads, several stockaded bridgeheads, and four picket stations. Along the circumference of the 37-mile circle of fortifications were emplacements for a total of 1501 field and siege guns (NPS 2004, 2007). Nineteen contributing elements have been identified and include both architectural remains (earthworks) and archaeological manifestations of seventeen forts and two batteries in DC, Virginia, and Maryland. The Civil War Fort Sites and Fort Circle Park System Historic District was listed on the NRHP in 1974 with an additional amendment in 1978 to enlarge the district boundary (Dillon 1972, 1976). One contributing element to the Civil War Fort Sites and Fort Circle Park System Historic District is located within the project area: archaeological site 51NW169.

Site 51NW169 is an unnamed Civil War battery location, characterized an ovoid flattened area measuring 150 feet by 100 feet and encircled by an earthen berm (Fiedel et al. 2008:160; Googins 2005). A trench is located below the berm on the northwest side (Googins 2005). The Broad Branch battery was an unarmed auxiliary battery with three vacant gun platforms (Fiedel et al. 2008:160). No artifacts are associated with this site. Although the boundary of site 51NW169 extends into the APE, no features associated with the Civil War battery location occur within DDOT right-of-way.

3.2.3 ARCHAEOLOGICAL POTENTIAL

While most of the Broad Branch Road project area is characterized by steep slopes, two locations are relatively flat: the extreme northern end of the project area and immediately north of the confluence of Soapstone Creek and Broad Branch.

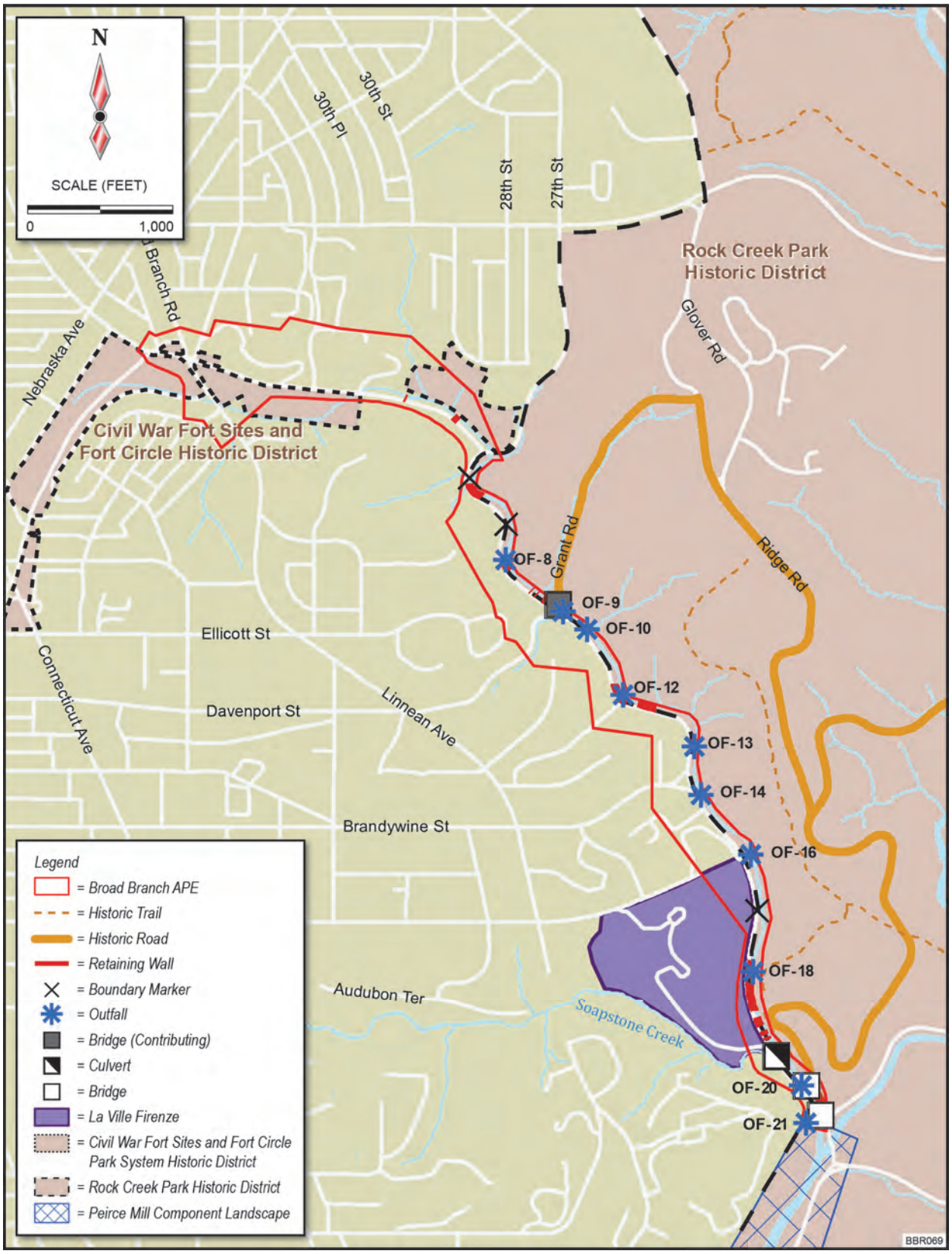


Figure 3-3. Civil War Fort Sites and Fort Circle Park System, and Rock Creek Park Historic Districts with associated architectural resources in the Broad Branch Road APE

Within the current area of potential effects (APE) at the extreme northern end of the Broad Branch Road Rehabilitation project, a geoarchaeological study was conducted for the Broad Branch stream restoration project (Wagner 2011). Although the stream restoration area contains both upland and alluvium terrain, both have experienced extreme modification. The uplands near Linnean Avenue have been either deeply graded or filled, and other uplands near Broad Branch Road are too steep for direct occupation; therefore, this area contains no potential for prehistoric resources (Wagner 2011).

The area north of the confluence of Soapstone Creek and Broad Branch contains a small residence with a sloping yard bounded by stone retaining walls (the Gatehouse at La Villa Firenze). Originally, this area contained steep slopes on either side of Soapstone Creek and along the west edge of Broad Branch as indicated on historic maps (Boschke 1861; Swinton 1881; USGS 1891, 1898) with no level floodplain. Road, park, and building construction activities at the confluence of Soapstone Creek and Broad Branch have altered the topography at this location. Broad Branch Road was constructed in 1839 and was cut from the steep slopes on the west side of Broad Branch including the area near the confluence with Soapstone Creek. By 1861, a small road was established along the north side of Soapstone Creek to access structures on the ridgetop (Boschke 1861). By 1898, a small structure is located north of the small access road, north of Soapstone Creek (USGS 1898) and this structure is depicted on subsequent historic maps (Baist 1903, 1907, 1911, 1913, 1919). The Soapstone Creek stone arch culvert was constructed in 1898 during a period of initial improvements to adjacent Rock Creek Park and the downstream wing walls were most likely added in 1934 when the culvert was extended. Prior to 1925, the small structure north of Soapstone Creek was demolished and the existing Tudor Revival style gatehouse was constructed. Because of the various ground disturbing activities north of the confluence of Soapstone Creek and Broad Branch, particularly the construction of a structure by 1898, its demolition prior to 1925, and construction of the existing gatehouse, this area contains no potential for prehistoric or historic resources.

Based on historical photographs and park history, archaeological sites related to the establishment of Rock Creek Park and the enhancement of the Park with the construction of rural architectural features may occur. A multi-course stone dam was constructed across Broad Branch north of the Soapstone Creek Culvert ca. 1898 to enhance the rural feel by creating a waterfall. Although evidence of the stone dam is no longer visible due to years of siltation at the confluence of Soapstone Creek and Broad Branch, archaeological remnants of the dam could occur. Fifteen segments of a historic stone retaining wall line the west side of Broad Branch in the stream bed; it is possible that the stone retaining wall may have been continuous and through time, portions have been displaced or destroyed by stormwater. Although surface manifestations of the stone wall are lacking along portions of the stream, archaeological remains of the wall foundations could occur.

3.2.4 Historic Structures

The term "historic structures" encompasses resources purposefully erected to serve some human activity and are typically classified as buildings, structures, objects, or districts. These structures may consist of residential buildings (*e.g.*, farmhouses, plantation manors, and associated outbuildings, including sheds and barns); industrial structures, such as mills and millraces;

commercial buildings (*e.g.*, stores, banks, and other business-related office buildings); transportation structures, such as bridges; and resources related to water control and distribution.

Historic structures or architectural resources in the project area include contributing and non-contributing elements to the Rock Creek Park Historic District (RCPHD) (Figure 3-3); a stone pedestrian bridge; roadway and water control features associated with District of Columbia infrastructure; residences; and educational and health facilities.

ROCK CREEK PARK HISTORIC DISTRICT

The RCPHD consists of 1,754 acres of land dominated by picturesque landscapes featuring forested areas, streams, valleys, meadows, and sloping hills. The Park was listed in the NRHP in 1991 based on themes of architecture, community planning and development, conservation, entertainment and recreation, industry, landscape architecture, military, and horticulture. Important persons associated with the history of the Park include Joshua Pierce and landscape architects Frederick Law Olmsted, Jr. and John C. Olmsted. The Park as a whole retains a high degree of integrity of design, workmanship, location, feeling, association, and setting.

The RCPHD was originally defined as 31 contributing elements and 59 non-contributing elements (Bushong, 1990a and 1990b). Nine of the 31 contributing resources are also individually listed on the NRHP (NPS, 2002). Two of the 31 contributing elements constitute categories or systems of resources relevant to the project area- the circulation network (historic roads and trails) and culverts and retaining walls. Components of the circulation network which are contributing elements to the historic district were delineated in the National Register registration form (Bushong, 1990a and 1990b); however, the individual culverts and retaining walls, scattered throughout the Park, had not been formally surveyed and were not inventoried as part of the nomination. Instead, the nomination documentation described the physical characteristics of culverts from the period ca. 1900 to 1941 that would contribute to the Historic District.

Architectural features associated with the RCPHD located within the project area include three bridges, two roads, a historic trail, a culvert, storm water outfalls with stone headwalls, stone retaining walls, and stone boundary markers (**Figure 3-4**; **Table 3-3**).

HISTORIC BRIDGE.

At the intersection of Broad Branch Road and Grant Road, is a stone arch culvert constructed in 1898 during a period of initial improvements to Rock Creek Park (Figure 3-3). The stone culvert headwalls are faced with irregularly coursed granite and the interior of the arch is lined with brick. A keystone is located at the center of the arch ring on each side of the bridge (Bushong 1990b; Davis 1996).

Figure 3-4. Grant Road Bridge, looking south

Table 3-3. Rock Creek Park Historic District Contributing Elements in the Project Area

RESOURCE	DATE OF CONSTRUCTION	DESCRIPTION	NRHP STATUS
Historic Bridges	1898	Grant Road Bridge (RCP-RPI 3450-7325)(stone arch culvert)	Contributing element to RCPHD
Historic Bridges	1957	Broad Branch Road Bridge over Rock Creek at Beach Drive (RCP-RPI 3450-7311)	Non- contributing element to RCPHD
Historic Bridges	1957	Ridge Road Bridge over Broad Branch stream (RCP-RPI 3450-7312)	Non- contributing element to RCPHD
Circulation Network – Historic Roads and Trails	1862	Grant Road (RCP-RP 3450-7325)	Contributing element to RCPHD
Circulation Network – Historic Roads and Trails	1899-1901	Ridge (Glover) Road	Contributing element to RCPHD
Circulation Network – Historic Roads and Trails	1830-1941	Trail on east side of Broad Branch stream	Contributing element to RCPHD
Culverts	1898	Soapstone Creek Culvert	Contributing element to RCPHD
Stormwater Outfalls	ca. 1900-1941	Ten stormwater outfalls associated with stone headwalls or stone retaining walls	Contributing elements to RCPHD
Retaining Walls	ca. 1900-1941	Fifteen relatively intact segments lining portions of Broad Branch	Contributing element to RCPHD
Boundary Monuments	ca. 1890s/1920s	Three stone boundary markers	Not evaluated; most likely contributing elements to the RCPHD

CIRCULATION NETWORK – HISTORIC ROADS AND TRAILS (1830-1941)

Grant Road was established in 1862 as part of the military road system for Washington's outer defense during the Civil War. Grant Road was widened, regraded, and surfaced with gravel in ca. 1898 (Bushong 1990b). Grant Road (1862) intersects the project area at Broad Branch Road. Ridge Road or Glover Drive begins near the intersection of Beach Drive and Broad Branch Road and ends at Military Road. Some segments of Glover Drive follow the alignment of old farm roads that predate the creation of Rock Creek Park. Originally known as "Ridge Road" and renamed to honor park promoter and benefactor Charles C. Glover, this was one of the first roads to be developed for recreational driving after Rock Creek Park was created. Most of the current alignment and grading date to 1899-1901 (Bushong 1990b; Davis 1996; MacKintosh 1985). In 1956, Glover Drive was shifted to intersect with Broad Branch Road, crossing the narrower stream on a short concrete and steel bridge instead of entering Beach Drive directly just north of the confluence of Rock Creek and Broad Branch (Davis 1996). A historic trail is present along the southern end of the project area beginning at the intersection of Broad Branch Road and Beach Drive. The trail is located north of the confluence of Rock Creek and Broad Branchand crosses Ridge Road. The trail parallels Broad Branch stream on the east side

climbing onto the ridge and diverging from the stream to join the Western Ridge Trail (Bushong 1990b).

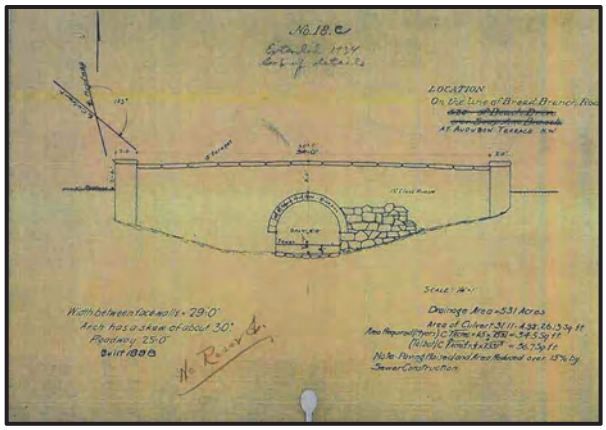


Figure 3-5. Soapstone Creek Culvert (1898 – DDOT Archives)

Figure 3-6. Pre-1934 Photograph of the Soapstone Creek Culvert (downstream side) without the wing walls. (E. B. Thompson, DC Public Library Photo Archives)

CULVERTS AND RETAINING WALLS (CA. 1900-1941)

Soapstone Creek Culvert, a 1957 retaining wall and spillway, ten storm drain outfalls associated with stone headwalls or with stone retaining walls, and fifteen segments of 1890s-1920s stone retaining walls occur within the project area. However, no intensive cultural resources survey has been conducted to record all historic structures within the APE.

Soapstone Creek Culvert. The Soapstone Creek culvert, located at the confluence of Soapstone Creek and Broad Branch stream, is a six-foot wide, stone arch culvert constructed in 1898 during a period of initial improvements to adjacent Rock Creek Park (**Figure 3-5**). The downstream wing walls were most likely added in 1934 when the culvert was extended (**Figure 3-6**).

Prominent features of Soapstone Creek Culvert include a downstream headwall with wing walls, an upstream headwall and retaining wall, and a red brick-lined barrel arch. The downstream headwall is faced with irregularly coursed rough cut granite; the interior of the arch is lined with red brick. The parapet retains some of the flat machine cut capstone slabs. The upstream headwall is irregularly coursed rough cut granite; the interior of the arch is lined with brick and parged. The parapet on the downstream side was capped with large hand beveled stone slabs. A determination of eligibility (DOE) form was prepared for Soapstone Creek Culvert and the DC SHPO concurred with the eligibility determination on June 20, 2011.

Storm Drain Outfalls. Ten stormwater outfalls associated with stone headwalls or stone retaining walls were observed during the site visits along Broad Branch conducted in July 2008 and April 2011 or were identified from current survey drawings and are considered contributing elements to the Rock Creek Park Historic District. (**Table 3-4**; Figure 3-3). These ten outfalls are among the 21 total identified in the entire project area in Appendix B. Although these outfalls drain stormwater from nearby DC neighborhoods, the stone features are located within Rock Creek Park. The storm water outfall construction includes corrugated metal pipe 18

inches in diameter embedded within the existing stone retaining wall, reinforced concrete pipe varying in width from 15 inches to 42 inches in diameter with regularly coursed rough cut stone headwalls and terra cotta pipe varying in width from 18 inches to 24 inches in diameter with stone headwalls with concrete repairs or embedded within the existing stone retaining walls.

Table 3-4. Storm Drain Outfalls Associated with Stone Headwalls or Stone Retaining Walls in Rock Creek Park

OUTFALL NUMBER	LOCATION	DESCRIPTION	NRHP STATUS
OF-21	Between Beach Drive and Ridge Road	15" reinforced concrete pipe (RCP) with regularly coursed rough cut stone headwall; three courses	Contributing element to RCPHD
OF-20	West of Ridge Road Bridge, west bank of Broad Branch	15" RCP with regularly coursed rough cut stone headwall; three courses	Contributing element to RCPHD
OF-18	North of Soapstone Creek, west bank of Broad Branch	18" Terra Cotta pipe in regularly coursed rough cut stone retaining wall segment H6; eleven courses	Contributing element to RCPHD
OF-16	South of Brandywine Avenue, west bank of Broad Branch	24" Terra Cotta pipe with stone headwall	Contributing element to RCPHD
OF-14	South of Brandywine Avenue, west bank of Broad Branch	24" Terra Cotta pipe sheathed in concrete with stone headwall; seven courses	Contributing element to RCPHD
OF-13	North of Brandywine Street	18" corrugated metal pipe in rough cut stone retaining wall segment H7	Contributing element to RCPHD
OF-12	North of Brandywine Street	24" Terra Cotta pipe in rough cut stone retaining wall segment H8	Contributing element to RCPHD
OF-10	(South of Davenport Street, west bank of Broad Branch)	24" Terra Cotta pipe with irregularly coursed rough cut stone headwall with concrete and tree roots	Contributing element to RCPHD
OF-9	South of Grant Road Bridge	42" RCP with downstream irregularly coursed rough cut stone mortared headwall	Contributing element to RCPHD
OF-8	North of Grant Road Bridge	24" in rough cut stone retaining wall segment H14	Contributing element to RCPHD

Retaining Walls. Sixteen retaining wall segments in Rock Creek Park were identified within the project area, fifteen of which are considered contributing elements to RCPHD. The general locations of the walls are identified in Figure 3-3 and detailed in Appendix B. Two general types of retaining walls were observed: mortared and dry laid (**Table 3-5**).

These fifteen segments of retaining wall that were identified as contributing elements appear to be dry laid with rough cut stone in regular courses (**Figure 3-7**). Observable courses vary by segment with many portions of the wall segments collapsed into Broad Branch stream. No evidence of mortar could be observed on collapsed stones in the stream. These segments may represent the remains of a once continuous stone retaining wall along Broad Branch Road. Based on documentary research, and photographic documentation conducted by the NPS, the stone retaining wall segments were most likely constructed between the 1890s and the 1920s (Monteleone 2011a).

Table 3-5. Intact Retaining Wall Segments along Broad Branch

SEGMENT	RESOURCE	LOCATION	DESCRIPTION	NRHP STATUS
HA	Mortared stone wall with concrete spillway	Station 92+62 to 92+77 (West side of Rock Creek, south of Broad Branch Road Bridge)	Irregularly coursed stone ashlar wall, with concrete pad or spillway; 58 feet in length; most likely constructed in 1957 with construction of Broad Branch and Ridge Road Bridges	Non-contributing element to RCPHD
H1	Dry laid stone wall – Segment 1	Station 90+60 to 92+64 (East side of Broad Branch Run, between Broad Branch Road Bridge and Ridge Road Bridge)	Regularly coursed rough cut stone wall; at least eight courses visible; 212 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H2	Dry laid stone wall – Segment 2	Station 86+13 to 86+39 (West side of Broad Branch, North of Soapstone Creek)	Regularly coursed rough cut stone wall; at least three course visible; 21 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H3	Dry laid stone wall – Segment 3	Station 85+68 to 85+97 (West side of Broad Branch, North of Soapstone Creek)	Regularly coursed rough cut stone wall; at least two courses visible; 30 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H4	Dry laid stone wall – Segment 4	Station 84+61 to 85+31 (West side of Broad Branch, North of Soapstone Creek)	Regularly coursed rough cut stone block wall; at least five courses visible; 66 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H5	Dry laid stone wall – Segment 5	Station 82+14 to 84+14 (West side of Broad Branch, North of Soapstone Creek)	Regularly coursed rough cut stone wall; maximum 6 courses visible; 190 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H6	Dry laid stone wall – Segment 6	Station 80+52 to 81+79 (West side of Broad Branch, North of Soapstone Creek)	Regularly coursed rough cut stone wall; maximum 14 courses visible; 124 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H7	Dry laid stone wall – Segment 7	Station 63+98 to 64+64 (West side of Broad Branch, North of Brandywine Avenue)	Regularly coursed rough cut stone wall; 71 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H8	Dry laid stone wall – Segment 8	Station 59+42 to 60+73 (West side of Broad Branch, South of Grant Road)	Regularly coursed rough cut stone wall; 131 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H9	Dry laid stone wall – Segment 9	Station 58+03 to 58+63 (West side of Broad Branch, South of Grant Road)	Regularly coursed rough cut stone wall; 57 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H10	Dry laid stone wall – Segment 10	Station 56+78 to 57+89 (West side of Broad Branch, South of Grant Road)	Regularly coursed rough cut stone wall; 89 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H11	Dry laid stone wall – Segment 11	Station 49+13 to 49+40 (West side of Broad Branch, North of Grant Road)	27 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H12	Dry laid stone wall – Segment 12	Station 48+56 to 48+70 (West side of Broad Branch, North of Grant Road)	10 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H13	Dry laid stone wall – Segment 13	Station 48+00 to 48+32 (West side of Broad Branch, North of Grant Road)	10 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD

SEGMENT	RESOURCE	LOCATION	DESCRIPTION	NRHP STATUS
H14	Dry laid stone wall – Segment 14	Station 45+02 to 46+05 (West side of Broad Branch, North of Grant Road)	Regularly coursed rough cut stone wall; 96 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD
H15	Dry laid stone wall – Segment 15	Station 38+68 to 40+28 (West side of Broad Branch, South of 27th Street)	Regularly coursed rough cut stone wall; 136 feet in length; most likely constructed 1890s-1920s	Contributing element to RCPHD

At the request of the NPS, a DOE form was prepared and submitted to the DC SHPO. On February 15, 2012, the DC SHPO concurred with the finding that the Broad Branch Retaining Walls / Rock Creek Park Retaining Walls located along Broad Branch Road from Beach Drive to 27th Street, NW are eligible for listing in the NRHP as a contributing element to the RCPHD.

Figure 3-7. Dry laid rough cut stone in regular courses (large block) between the Broad Branch Road and Ridge Road Bridges

BOUNDARY MONUMENTS

At least three stone boundary monuments incised with 'R.C.P.', possibly dating to the initial establishment of the Park in the 1890s, mark the border of Rock Creek Park and occur immediately adjacent to the Broad Branch Road project area where the District of Columbia and Rock Creek Park boundaries meet. Modern metal monuments delineate the official boundary and are co-located with the older boundary markers (**Figure 3-8**). This resource category was not cited as a contributing resource to the RCPHD (Bushong 1990b) but is likely to be considered a contributing element during the NPS re-evaluation and update of the RCPHD.

Figure 3-8. Modern Metal Witness Post co-located with the older stone boundary marker

STONE PEDESTRIAN BRIDGE

A stone footbridge is located within the DDOT ROW past the north end of the Rock Creek Park boundary (**Figure 3-9**; **Figure 3-10**) adjacent to the Civil War Fort Sites and Fort Circle Park System Historic District and U.S. Reservation 515. The stone footbridge has irregularly coursed stone headwalls, wing walls and abutments. The bridge deck is concrete. The parapets are crenallated and the mortar joints are beaded. Originally, a

wooden bridge crossed Broad Branch at this location (DC WASA 1983a) which was later replaced with the stone pedestrian bridge and encased a 12 inch diameter sewer pipe. Based on the DC WASA counter map IK-23-24-NW (DC WASA 1983a), this portion of the sewer line was abandoned in 1966.

Figure 3-9. Stone Pedestrian Bridge over Broad Branch stream

DC ROADWAY/INFRASTRUCTURE-RELATED RESOURCES

Architectural features associated with DC roadway and infrastructure include Broad Branch Road, 27th Street, the 27th Street Bridge, roadway guard rails, and water control resources such as storm drain outfalls and inlets, retaining walls, culverts, stone channels, and circular features (**Figure 3-10**).

BROAD BRANCH ROAD

Broad Branch Road was surveyed by county surveyor Lewis Carberry and constructed in 1839 for the convenience of the Peirces who owned the mill located south along Rock Creek (Bushong 1990a, 1990b; Davis 1996). Broad Branch followed the south side of the valley formed by that stream and could be reached by a short connection paralleling the mill race for Peirce Mill, which left Rock Creek just south of the confluence with Broad Branch. Peirce Shoemaker deeded the roadway to the federal government in 1854, after which it became an official public highway (Davis 1996). One of the earliest surveys where the alignment of the road is indicated is a September 1864 survey plat for the Levy Court.

Previous alterations have resulted in diminished aspects of integrity to the historic road. The original surface treatment materials and design of the roadway have likely evolved from dirt to gravel and then to pavement. Elements of the rural setting, historic feeling, and association with parkland remain intact because the eastern side of the roadway still bounds an undeveloped, wooded setting that was designated a national park in 1890; however, repeated additions of curb and gutters, the construction of guard rails, and sequential repaving along the alignment as well as the residential development on the northern and western side of the roadway beginning in the 1920s and 1930s have altered the original rural character of the road. As a result of these previous alterations and continued maintenance, the road is not likely to be considered eligible for the NRHP.

27TH STREET

In 1861, 27th Street was originally a local farm road linking Broad Branch Road to Military Road (Boschke 1861) and it has retained its original alignment. Similar to Broad Branch Road, previous alterations have resulted in diminished aspects of integrity to the historic road; therefore, the road is not likely to be eligible for the NRHP.

Figure 3-10. DC Roadway/Infrastructure Related Resources in the Broad Branch Road APE

27TH STREET NW, BRIDGE

The 27th Street NW Bridge is a concrete deck bridge and parapet with regularly coursed rough cut stone abutments on concrete foundations. An irregularly coursed rough cut stone retaining wall on a concrete foundation is located on the east bank on the north side of the 27th Street Bridge. A hand beveled capstone is intact on the north end of the wall; a second capstone is on the ground. A square opening, most likely a scupper, similar to ones located in the Soapstone Creek Culvert headwalls, is located at the juncture of the stone wall and concrete foundation. The parapet and stone abutments represent intact elements of the original bridge constructed ca. 1925. The concrete deck bridge was installed in 1950. A DOE form was prepared and submitted to the DCSHPO in conjunction with the Preliminary Engineering Report and Categorical Exclusion for the proposed replacement of the 27th Street NW, Bridge (AECOM 2012). The DOE recommended that the 27th Street, NW Bridge is not considered individually eligible for listing in the NRHP and is not a contributing resource to the RCPHD. The DC SHPO concurred with this recommendation on June 22, 2012.

ROADWAY GUARD RAILS

Two discrete areas along Broad Branch Road contain possible guard rails: north of the intersection with Ridge Road and at the T intersection with Brandywine Street. Two strands of metal cable are hung between concrete posts. Although the roadway guard rails may be older than 50 years, they represent ancillary or support features associated with roadway operations and are not likely to be considered NRHP-eligible as a crucial element of the DC roadway system.

WATER CONTROL FEATURES

Water control features identified within the project area along the north and west sides of Broad Branch Road include storm drain outfalls and inlets, retaining walls, culverts, stone channels, and circular features (**Table 3-6**). These resources likely date to the development or subsequent improvement of the roadway and are not associated with the development of Rock Creek Park (Monteleone 2011b). While these resources may be older than 50 years, they represent ancillary or support features associated with the DC roadway operations and storm drain system and are not likely to be considered NRHP-eligible as crucial elements of these systems.

Table 3-6. Cultural Resources Associated with Water Control Features in the Project Area

RESOURCE	LOCATION	DESCRIPTION	NRHP STATUS
Storm Drain Outfall	OF-3 (North of Grant Road Bridge)	15” pipe in stone retaining wall	Not eligible
Storm Drain Inlet	South of Grant Road Bridge, west of Broad Branch Road	42” RCP with stone headwall (upstream); 1930s?	Not eligible
Storm Drain Inlet	North end of project area, south side of Broad Branch Road	36” RCP with brick, concrete and stone headwall and wing wall with crenallated stone; empties into buried concrete box culvert channel; constructed in 1937	Not eligible
Retaining wall (HB)	West of 27th Street, east of stone pedestrian bridge, south side of Broad Branch	42 feet in length	Not eligible
Retaining Wall (HC)	South edge of concrete box culvert	concrete wall; 13 feet in length	Not eligible

RESOURCE	LOCATION	DESCRIPTION	NRHP STATUS
Culvert	South side of Broad Branch, opposite Ingleside Manor at the Presbyterian Home	7.75' x 10' concrete box culvert with headwall with irregularly coursed stone veneered wing walls with concrete base; chain link fence set in headwall and wing walls; constructed in 1937	Not eligible
Stone Channel	South of 27th Street, east of Broad Branch Road	Large stones are base of channel; smaller stones line edges	Not eligible
Stone Channel	South of 27th Street, east of Broad Branch Road	Large stones are base of channel; smaller stones line southern edge	Not eligible
Circular Feature	South of Soapstone Creek Culvert, east of Broad Branch Road	Tabular stone with mortar; four courses; completely exposed by erosion from Broad Branch	Not eligible
Circular Feature	South of Soapstone Creek Culvert, east of Broad Branch Road	Brick with mortar on concrete base; at least 12 courses; with terra cotta pipe at bottom; completely exposed by erosion from Broad Branch	Not eligible

RESIDENCES

Thirty-five residential structures occur along Broad Branch Road in the project area and were constructed from 1920 through 2008. Twenty-five residences are older than 50 years. At the request of the DC SHPO based on their examination of the project area, only one building was identified for preparation of a DOE form: the gatehouse for La Villa Firenze. Based on the DC SHPO assessment, the other houses are not likely to be individually eligible nor are they likely to comprise an historic district that would be eligible for the NRHP for purposes of this undertaking.

Figure 3-11. Gatehouse for La Villa Firenze, looking northwest (pre-1935). (E. B. Thompson, DC Public Library Photo Archives)

The residence located at 4400 Broad Branch Road, NW is a Tudor Revival style house constructed between 1925 and 1927 that serves as a gatehouse for La Villa Firenze, currently the Italian Ambassador's residence (**Figure 3-11** and **Figure 3-12**). The gatehouse is a one and a half story building with stucco exterior, half-timbering and two stone chimneys. The original stone retaining walls along Broad Branch Road at the entrance to the driveway and the original stone pillars flanking the driveway are intact (Figure 3-11). The light

Figure 3-12. Gatehouse for La Villa Firenze, looking west (2011)

fixtures on the stone pillars have been replaced and a wrought iron fence has been added (Figure 3-12). Minimal alterations to the exterior design of the gatehouse are apparent and the overall integrity of design remains intact.

The gatehouse at La Villa Firenze is considered a contributing element to this residential complex. Access to the entire estate for NRHP evaluation is restricted at this time as the property is owned by the Italian government and as such the buildings are located on foreign soil. However, based on preliminary research, La Villa Firenze and its contributing elements, would most likely be considered eligible for listing on the NRHP, due to its association with philanthropist and prominent Washington hostess, Rebecca Pollard "Polly" Guggenheim Logan, and as an excellent representative example of the 1920s Tudor-style architecture in Washington, DC. At the request of the DC SHPO, a DOE form was prepared and on February 15, 20121, the DC SHPO concurred that the gatehouse is most likely eligible as a contributing element to the residential complex known as La Villa Firenze.

EDUCATIONAL AND HEALTH FACILITIES

Three parcels adjacent to the Broad Branch Road project area contain educational and health facilities including the Carnegie Institution's Broad Branch Campus containing the Department of Terrestrial Magnetism and Geophysical Laboratory (education); the Ingleside Manor at the Presbyterian Home (medical facility), and the Hillwood Estate, Museum and Gardens (education).

CARNEGIE INSTITUTION'S BROAD BRANCH CAMPUS

Two buildings associated with the Carnegie Institution's Broad Branch campus are located within the APE: Abelson Hall (ca. 1913-1914) and the Research Building (ca. 1989) (Baist 1913; Bauer and Fleming 1915). The Department of Terrestrial Magnetism (DTM) building or Main Building was designed by Waddy Butler Wood in the Italian Renaissance style and constructed by the Davis Construction Company in 1913-1914 (Bauer and Fleming 1915; Brown 2004). With the completion of the new Research Building in 1990, research activities in the DTM building were moved to the new facility. In 1991, the DTM building was renovated which included reorganization of interior spaces, replacement of windows, the addition of an elevator, the addition of a large glass-enclosed three-story exterior stairway on the north elevation, and the addition of large air handling equipment on the roof extending above the original roof line (Hardy 2012). The DTM building was renamed Abelson Hall in 1999 after Dr. Philip Hauge Abelson (1913-2004), a biochemist, nuclear physicist, and microbiologist.

INGLESIDE MANOR AT THE PRESBYTERIAN HOME

The Ingleside Manor was constructed in the 1930s (Ingleside at Rock Creek 2011). The 1913, 1919 and 1937 Baist maps indicate that this parcel was owned by the Schneider family; the lot appears to have been subdivided and two stone residences were constructed prior to 1937. The east half was owned by Florence Schneider Montfort (1894-1988), daughter of the Washington, D.C. architect Thomas Franklin Schneider (1858-1938), who designed the Cairo Hotel. In 1960, the Presbyterian Home moved to the Broad Branch location. The Ingleside Manor is currently used for corporate offices, special functions, and Ingleside guests.

HILLWOOD ESTATE, MUSEUM AND GARDENS

The Hillwood Estate, Musem and Gardens consists of 25 acres of landscaped gardens and natural woodlands surrounding the mansion, a visitor's center and several outbuildings. The Georgian-style mansion was originally designed by John Diebert in 1926 (HillwoodMuseum.org 2011). The mansion was extensively enlarged and redesigned in the mid 1950s by New York architect Alexander McIlvaine and the New York design firms of McMillen, Inc. and French and Company after Mrs. Marjorie Merriweather Post purchased the estate (HillwoodMuseum.org 2011). Marjorie Merriweather Post was the only child of cereal magnate C.W. Post. She inherited the Postum Company in 1914 and began collecting art -- primarily Sèvres porcelain and French furniture and tapestries -- in the 1920s after her marriage to financier Edward F. Hutton. Mrs. Post became interested in Russian art when husband Joseph E. Davies served as ambassador to the Soviet Union in the late 1930s. During these years, the Soviet government was selling many of the treasures it had appropriated from the church, the imperial family and the aristocracy in an effort to finance the new government's industrialization plan. She acquired the nucleus of her Russian holdings at this time, but she continued to collect French and Russian art for the rest of her life, eventually amassing the most comprehensive Russian imperial collection in the West. Mrs. Post died in 1973 and the Hillwood Estate, Museum and Gardens were opened as a public institution in 1977 (HillwoodMuseum.org 2011).

3.2.5 CULTURAL LANDSCAPES

Cultural landscapes, as defined by the Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, consist of "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values."

Rock Creek Park was established by Congress in 1890 as an open space for the enjoyment of the scenery, bicycle and horseback riding, strolls, picnics, and pleasure driving, and its establishment was an important event in the nineteenth century movement to preserve natural scenic areas in the United States (Bushong 1990b). Rock Creek Park Historic District possesses significance as a historic natural landscape, which was adapted and significantly enhanced as a public park by the U. S. Army Corps of Engineers and the National Park Service between 1690 and 1941. The influential 1916 Olmsted report, prepared by acknowledged master landscape architects Frederick Law Olmsted, Jr., and John C. Olmsted, established methods of landscape practice and a general development plan for the park which has guided management of the reservation's natural resources to the present day. Implemented in 1919 the plan was a significant early application of park landscape planning and scenic preservation. Cultural landscapes and natural viewsheds associated with the RCPHD are characterized by views within the Historic District and not necessarily by views to the surrounding neighborhoods.

In 1997, a cultural landscape inventory was conducted for Rock Creek Park (NPS, 2003a and 2003b). Based on the preliminary research gathered during this inventory, Linnaean Hill and Pierce Mill were identified as component landscapes of Rock Creek Park (NPS 2003a, 2003b). As a result, Rock Creek Park met the criteria for significance and integrity for listing on the NRHP as a historic designed landscape. Both Linnaean Hill (including the Pierce-Klingle Mansion) and the Peirce Mill

also comprise individually eligible landscape elements (NPS 2003a, 2003b). The Linnaean Hill Component Landscape consists of 31.8 acres located on a bluff overlooking the west bank of Rock Creek near the confluence with Piney Branch and is not located within the project area.

3.2.5.1 Peirce Mill Component Landscape

The Peirce Mill Component Landscape consists of 24 acres located on the west bank of Rock Creek within the floodplain, south of its confluence with Broad Branch. The Pierce Mill Component Landscape includes the Pierce Mill and is important for illustrating the evolution of land uses through time: a nineteenth century utilitarian landscape associated with a privately owned milling and agricultural use; an early twentieth century picturesque design including a tea house and picnic grounds; and a mid twentieth century living history interpretative site (NPS 2003b). The Pierce Mill Component Landscape is located on the south end of the project area (Figure 3-3); however, no current or lost historic views and vistas, or contributing features of the Pierce Mill Component Landscape are located within or near the project area (NPS 2003b).

3.2.5.2 Historic Trails Cultural Landscape

The NPS is currently preparing a Historic Trails Cultural Landscape study; a final report will be available in 2013 (Monteleone 2011b). Contributing features include specific types of trails and trail alignments, topography and natural features (organizational and spatial patterning), structures, vegetation consisting of understory and canopy, views and vistas, and small scale features such as culverts and headwalls, benches, checkdams, signage, and retaining walls.

Two historic trails, as identified in the draft Historic Trails Cultural Landscape Report (Poss and McMillen 2012), are present along the southern end of the project area near the intersection of Broad Branch Road and Beach Drive (Figure 3-3): the Soapstone Valley foot trail and the bridle trail from the intersection of Broad Branch and Beach Drive to White Horse Trail. The Soapstone Valley foot trail predated the establishment of Rock Creek Park and was originally developed as a carriage road which was converted to a bridle trail by the USACE in 1916. The trail was abandoned in 1927 but reconstructed in 1979 using portions of the previous alignment (Poss and McMillen 2012:114). Portions of the Soapstone Valley foot trail are considered eligible as part of the Historic Trails Cultural Landscape. Historic natural views from the Soapstone Valley foot trail within the APE include the upstream headwall and wingwall of the Soapstone Creek Culvert. The view of the trail extending west from the Soapstone Creek Culvert is obscured by topography and vegetation. The bridle trail begins north of the confluence of Rock Creek and Broad Branch, crosses Ridge Road, and parallels Broad Branch on the east side climbing onto the ridge and diverging from the stream to join the Western Ridge Trail. The segment of the bridle trail from the confluence of the streams to Ridge Road was developed as part of the Mission 66 funding (1955-1966) and may not be considered eligible as part of the Historic Trails Cultural Landscape (Poss and McMillen 2012). The segment of the trail from Ridge Road to the Westen Ridge Trail was originally a bridle trail that predated the establishment of Rock Creek Park and is considered eligible as part of the Historic Trails Cultural Landscape (Poss and McMillen 2012). Historic natural views from this segment of the bridle trail consist of open vistas to the northwest and west across Broad Branch and include views of the existing Soapstone Creek Culvert, five segments of

the historic retaining walls (segments H2, H3, H4, H5, and H6), and two stormwater outfall stone headwalls (OF-20 and OF-21).

3.2.6 Ethnographic Resources

Ethnographic resources are defined in NPS Director's Order 28 as any "site, structure, object, landscape or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it."

Ethnographic resources are not known to exist in the project area.

3.2.7 Museum Collections

The archaeological collections from Rock Creek Park archaeological sites are retained at the Museum Resource Center of the NPS, National Capital Region in Landover, Maryland. The other museum collections associated with Rock Creek Park are located at the Rock Creek Park Nature Center on Glover Road, NW and the Old Stone House in Georgetown. No buildings where museum collections are or could be stored, or large scale artifacts displayed, are within the project APE.

3.2.8 Indian Trust Resources and Native American Sacred Sites

Indian trust assets are owned by American Indians but held in trust by the United States. Requirements are included in the Secretary of the Interior's Secretarial Order No. 3206, *"American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act,"* and Secretarial Order No. 3175, *"Departmental Responsibilities for Indian Trust Resources."*

No Indian trust resources or Native American sacred sites have been identified within the project area.

3.2.9 Paleontological Resources

Paleontological resources include casts, molds, and trace fossils such as burrows and tracks. Fossil localities typically include surface exposures, areas where subsurface deposits are exposed by ground-disturbing activities, and circumstances affording special environments for preservation such as caves, peat bogs, and tar pits. Paleontological resources are important mainly for their potential to provide scientific information on paleoenvironments and the evolutionary history of plants and animals.

Paleontological resources are generally not afforded the same degree of protection as cultural resources and few legal mandates exist for the management of paleontological resources. Unlike cultural resources, paleontological resources are not viewed as nonrenewable. Theoretically, there are finite numbers of fossils, but they are continually being exposed by natural processes of erosion. Fossils are not all considered extremely valuable, and their removal generally does not diminish the research potential of a deposit (National Research Council 1987:11-13).

Prior to 2009, the treatment of paleontological resources was regulated in some states by state law and both the U.S. Forest Service and the Bureau of Land Management (BLM) implemented internal regulations to protect vertebrate and unique fossils and control the use of this resource type. Additionally, some fossil localities may have qualified for recognition under the National Natural Landmarks Program.

The Paleontological Resources Protection Act (PRPA) of 2009 (part of the Omnibus Public Land Management Act) requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal lands under the stewardship of the BLM, the NPS, the Bureau of Reclamation (BOR), the USFWS, and the U.S. Forest Service. The PRPA includes provisions for the casual or hobby collecting of common invertebrate and plant fossils without a permit on some federal lands (those managed by the BLM, BOR, and U.S. Forest Service); criminal and civil penalties for unauthorized collection; and the confidentiality of paleontological localities. Casual collecting is not allowed within the National Parks or other lands managed by the NPS. Paleontological resources are not protected by legislation on private lands.

The BLM has also established the Potential Fossil Yield Classification (PFYC) system for use in broad approach planning efforts and for evaluating specific impacts. The PFYC identifies the fossil potential in geological formations and the associated risks for impacts (BLM 2010).

The only fossiliferous formation within Rock Creek Park is the Cretaceous Period Potomac Formation which typically occurs in the higher elevations and deposits include unconsolidated sand, gravel, silt, and clay (NPS 2009; Southworth and Denenny 2006). The Potomac Formation is associated with dinosaur and plant fossils, which include some of the oldest known flowering plant fossils, found throughout the National Capital Region (NPS 2009). Based on the BLM's PFYC system, the Potomac Formation would be designated a Class 3a, moderate potential to contain vertebrate fossils in widely scattered contexts (BLM 2010).

The Cretaceous Period Potomac Formation has no surface manifestations in the Broad Branch Road project area. Therefore, no known paleontological localities associated with the Potomac Formation occur in the project area (Monteleone 2011b).

3.3 SOCIOECONOMIC RESOURCES

3.3.1 LAND USE

This project is located in the Rock Creek West Planning Area, which is characterized by stable and well-maintained neighborhoods. Land uses within the project vicinity are predominantly Low Density Residential with one Institutional land area (Carnegie Institution of Washington), and some Park/Recreation/Open Space, discussed in the Section 3.3.9, at the northwestern end of the corridor. The majority of the eastern side of the corridor (Rock Creek Park) is designated Park/Recreation/Open Space (DC Government 2007a, 2007b, 2007c).

The District's comprehensive plan and land use maps were reviewed to determine future land use along Broad Branch Road. Based on the Plan, future land uses in all areas are expected to remain similar to the existing land uses.

SOVEREIGN NATIONS

Five properties along the project right-of-way are owned by foreign countries for use as residences for their ambassadors to the United States and are considered foreign soil. Sovereign nations that own property from north to south along Broad Branch Road include: Tunisia, Ivory Coast, Peru, Malaysia, and Italy. The main entrance to the ambassador's residence for the Ivory Coast is from

Broad Branch Road. Ambassadors' residences for Tunisia, Malaysia, and Italy are accessible from Broad Branch Road; however these entrances appear to be secondary. A gatehouse at the entrance to Italian embassy residence occurs along Broad Branch Road. There is no access to the Peruvian embassy residence from Broad Branch Road. DDOT is coordinating with US State Department to inform the nations located along the roadway corridor of proposed roadway improvements.

3.3.2 ZONING

The majority of the area to the east of Broad Branch Road is federally-owned park land and, as such, is not zoned. North and west of the corridor is zoned at R-1-A for single-family residential detached dwellings. Residences in this area are zoned for a minimum lot width of 75 feet and maximum lot occupancy of 40 percent, resulting in a more rural feel to the neighborhood compared to more highly urbanized areas within the District (District Office of Zoning, 2011).

3.3.3 DEMOGRAPHICS

The Broad Branch Road corridor traverses the southern part of Census Tract 14.02, the center of Census Tract 13.01, and the northeastern portion of Census Tract 13.02. As shown in **Table 3-7**, this area as a whole has experienced population growth over the past twenty years, however Census Tract 14.02 has seen large fluctuations in population over this period.

Table 3-7. District of Columbia and Area Population

AREA	1990 POPULATION	2000 POPULATION	2010 POPULATION	% POPULATION CHANGE	
				1990-2000	2000-2010
Washington DC	606,900	572,059	601,723	-5.7%	5.2%
Census Tract 14.02	2,863	3,925	2,998	37%	-24%
Census Tract 13.01	3,693	3,747	3,955	1.5%	5.6%
Census Tract 13.02	6,459	6,350	6,587	-1.7%	3.7%
Corridor Tracts	13,015	14,022	13,540	7.7%	-3.4%

(NeighborhoodInfoDC, 2011)

3.3.4 ENVIRONMENTAL JUSTICE

Presidential Executive Order (EO) 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* directs Federal agencies to identify and address as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. The process to identify potential disproportionate impacts associated with the proposed action was as follows:

- Identification of the potentially affected population in the study area;
- Characterization of the study area with respect to minorities and low-income populations;
- Determination of potentially significant adverse impacts of the proposed action and alternatives; and
- Evaluation of the potential for disproportionately high and adverse impacts on minority populations and low-income populations in proximity of the alternate sites.

The demographic census data along the construction alignment were examined to determine the presence of any potential Title VI, minority, or low-income populations. In total, the block groups crossed by the alignment have a lower percentage of minority and low-income populations compared to the District of Columbia. Minorities make up approximately 27 percent of the population in the corridor compared with the District, which has a total minority population of approximately 65 percent (US Census Bureau, 2010; NeighborhoodInfoDC, 2011). The percentage of low-income populations along the alignment is approximately 11 percent compared to approximately 18 percent for the District.

3.3.5 Economics and Development

The average family income in Census Tracts 13.01, 13.02, and 14.02 (2005 to 2009, in 2010 dollars) is $279,103, $183,352, and $231,149 respectively as compared to the District-wide average of $115,016 (NeighborhoodInfoDC, 2011). The poverty rate in the census tracts crossed by the alignment is under 11% compared to the District which has a poverty rate of 18.5% (US Census Bureau, 2010).

3.3.6 Joint Development

Joint development projects are commercial, residential, industrial, or mixed use developments that are undertaken in concert with transit facilities. Currently, there are no proposed or existing joint developments in the vicinity of Broad Branch Road.

3.3.7 Aesthetics and Visual Quality

The existing aesthetics and visual quality is described below for different sectors of the project area, which represent different viewer perspectives and visual requirements, including the Broad Branch Road Sector, the Rock Creek Park Sector, the Residential Sector, and the Educational/Institutional Sector (**Figure 3-13**).

3.3.7.1 Broad Branch Road Sector

Broad Branch Road is a relatively low-speed two-lane roadway with a combination of vertical and horizontal curves and both natural and landscaped vegetation that provide a rural feel within the District. The roadway is either bordered on the west by single family residential homes with landscaped lawns or forested on some of the larger lots. The east side of the road consists of forested lands of Rock Creek Park, much of which is in a relatively natural state. The narrow pavement, lack of sidewalks, and curbs and gutters in many places, and large trees with canopies that reach over the roadway also contribute to the relatively rural visual character of the roadway.

3.3.7.2 Rock Creek Park Sector

Rock Creek Park consists of 1,754 acres of land dominated by picturesque landscapes featuring forested areas, streams, valleys, meadows, and sloping hills. Two vantage point areas overlooking the Broad Branch project are the southern portion of Ridge Road/walking trail and Grant Road/Broad Branch intersection. Views from other possible vantage points are obscured by the intervening forest and steep hill slopes. The view from the unnamed Civil War battery associated with Fort Circle Park along the northern edge of the project area is obscured by the tree canopy and vegetation, and the steep hill slopes.

Figure 3-13. Sectors and Vantage Points, Aesthetics and Visual Quality Analysis

Vantage Point 1: Ridge Road/Walking Trail. Ridge Road intersects with Broad Branch Road west of Beach Drive, crosses Broad Branch and climbs in elevation to meet Glover Road on the ridge top. Portions of the project area visible from Ridge Road occur between stations 92+00 and 82+00. A walking trail in this same area extends farther along Broad Branch before climbing to meet the Western Ridge Trail. Portions of the project area visible from the walking trail occur between stations 92+00 and 79+00 and are dependent upon tree canopy and density of vegetation. The view from this vantage point includes portions of Broad Branch Road, Soapstone Creek Culvert, segments of historic retaining walls 2 through 6, storm water outfall stone headwalls (OF-20 and OF-21), and the gatehouse associated with La Villa Firenze.

Vantage Point 2: Grant Road. Portions of the project area visible from Grant Road are extremely narrow and occur between stations 50+00 and 51+00. The view from this vantage point includes a tiny portion of Broad Branch Road, and the tops of the stone parapets associated with Grant Road Bridge.

3.3.7.3 Residential Sector

The residential sector includes areas on the west and north sides of Broad Branch Road containing private residences and ambassador residences of sovereign nations (Italy, Malaysia, Peru, Ivory Coast, and Tunisia). Four vantage point areas overlooking the Broad Branch Road project area include views from specific residences and roadway intersections. All other possible vantage points are above elevation with Broad Branch Road and the steep hill slopes covered with dense natural forest obscure views of the road.

Vantage Point 3: Gatehouse at La Villa Firenze. The one and a half story residence located at 4400 Broad Branch Road, NW is a Tudor Revival style house that serves as a gatehouse for La Villa Firenze, currently the Italian Ambassador's residence. The gatehouse is located immediately north of Soapstone Creek. Portions of the project area visible from the gatehouse are extremely narrow and occur between stations 86+00 and 88+00. The view from this vantage point includes portions of Soapstone Creek Culvert, the banks of Broad Branch, and the dense forests of Rock Creek Park.

Vantage Point 4: Brandywine Street. Private residences constructed during the 1930s occur in the vicinity of Brandywine Street and Broad Branch Road and are located up slope from the roadway with lawns, landscaping, and trees and vegetation on the hill slopes. Portions of the project area visible from the residences occur between stations 64+00 to 68+00. The view from this vantage point includes portions of Broad Branch Road and some existing vertical elements of the roadway such as road signs at the intersection. The hill slopes and vegetation partially obscure the view to the roadway.

Vantage Point 5: Ambassador's residences for Ivory Coast and Tunisia. Both ambassador residences are located uphill from Broad Branch Road with lawns, landscaping, and open parkland features on the hill slopes leading down to the road. Portions of the project area visible from these residences occur between stations 23+00 and 30+00. The view from this vantage point includes portions of Broad Branch Road and some existing vertical elements of

the roadway such as road signs at the intersection. The hill slopes and trees partially obscure the view to the roadway.

Vantage Point 6: Linnean Avenue. Private residences constructed during the 1950s occur along Linnean Avenue. This residential area is separated from Broad Branch Road by parklands associated with Fort Circle Parks with open areas and trees. The private residences are located at grade with Broad Branch Road. Portions of the project area visible from the residences on Linnean Avenue occur between stations 15+00 and 20+00. Because this area is located at grade with Broad Branch Road, the view from this vantage point includes only existing vertical elements of the roadway such as road signs at the intersection. Residential and parkland trees partially obscure the view.

3.3.7.4 Educational/Institutional Sector

The educational/institutional sector includes the Carnegie Institution's Broad Branch campus and the Ingleside Manor at the Presbyterian Home, located on the north side of Broad Branch Road toward the northern project terminus and the Hillwood Estate, Museum and Gardens located at the southern terminus. All three facilities are located uphill from Broad Branch Road with lawns, landscaping, and open parkland features on the hill slopes leading down to the road. The view from Ingleside Manor and the Hillwood Estate, Museum and Gardens are completely obscured by trees on the hill slopes.

Vantage Point 7: Carnegie Institution's Broad Branch Campus. Two buildings associated with the Carnegie Institution's Broad Branch campus are located in the project area: Abelson Hall (ca. 1913-1914) and the Research Building (ca. 1989). Portions of the project area visible from the Carnegie Institution's Broad Branch Campus occur between stations 15+00 and 23+50. The view from this vantage point includes portions of Broad Branch Road and some existing vertical elements of the roadway such as road signs at the intersection. The hill slopes and trees partially obscure the view to the roadway.

3.3.8 Health and Safety

Broad Branch Road currently has inadequate facilities for pedestrians and non-motorized vehicle use. There are no sidewalks, marked crossings, or bike lanes currently provided in the roadway corridor. Deteriorated sewer lines along Broad Branch Road are leaking sewage. Uncontrolled runoff from elevated parcels to the west of the roadway has contributed in large part to the deterioration of this two-lane roadway, including the collapse of the culvert that conveys Soapstone Creek beneath Broad Branch Road. Poor sight distances, poor lighting, lack of shoulders, and a tendency for drivers to exceed the 25 mph speed limit provide for unsafe driving conditions.

3.3.9 Community Resources

Three facilities accessible by the community are located along the project corridor (**Figure 3-14**). The Carnegie Institution of Washington, located at 5241 Broad Branch Road, NW, has an entrance off of Broad Branch Road at the northern end of the project area. The Carnegie Institute Washington houses the Department of Terrestrial Magnetism (DTM) with the original

Figure 3-14. Community Facilities in the Project Area

purpose of mapping the Earth's geomagnetic field. Since the completion of that work in the late 1920s, the facility continues to conduct interdisciplinary scientific research to understand the physical Earth and the universe. The facilities house highly specialized and sensitive equipment. In addition to its primary role as a scientific research facility, the DTM hosts a neighborhood lecture series opened to the public. East of the Carnegie Institution is Ingleside at Rock Creek, a 14-acre non-profit residential retirement community, located at 3050 Military Road, NW. The community has a back entrance off the north side of Broad Branch Road between the Tunisian ambassador's residence and the Carnegie Institution of Washington. Hillwood Museum and Gardens, located at 4155 Linnean Avenue, NW, opened as a public institution in 1977. The facility features a mansion housing an art collection and extensive gardens. The museum is open daily five to six days per week year around with a short break in the winter. The facility charges an admission/recommended donation for visitors. The Hillwood property is located at the southern terminus of the project area on the west side of Broad Branch Road but is not accessible by Broad Branch Road.

EMERGENCY SERVICES

Emergency services in the area are provided by the District Fire and Emergency Medical Services Department. There are three police departments located in the project vicinity: Washington DC Police Department on 3320 Idaho Avenue NW, Washington DC Police Department on 6001 Georgia Avenue NW, and Metropolitan Police Department on 801 Shepherd Street NW, allowing for emergency response within the corridor from three different directions. The corridor is surrounded by five fire departments the closest two of which are located a few blocks southwest of both the northern and southern terminus of the project at 4930 Connecticut Ave NW and 3522 Connecticut Ave NW. The closest medical centers are the Washington Hospital Center (110 Irving Street NW) and Howard University Hospital (2041 Georgia Ave NW), both located to the southeast on the other side of Rock Creek Park.

SCHOOLS

There are no schools located in the project corridor, however Howard University Law School, the University of the District of Columbia, and Edmond Burke School are all located several blocks west of the southern end of the project area. St. John's College High School is located several blocks north of the project area off 27th Street NW.

PARKS AND RECREATIONAL RESOURCES

NATIONAL PARKS

Broad Branch Road provides access to Rock Creek Park and Soapstone Valley foot trail. Soapstone Valley Park, a management unit within Rock Creek Park, is not located in the project alignment, however is accessible via Soapstone Valley foot trail, the eastern trailhead of which is located on DDOT ROW. Rock Creek Park was established in 1890 by an Act of Congress for scenic and recreational enjoyment. It encompasses federal reservation 339 and is 1,754 acres (Bushong 1990b). The Park is a natural reserve within a heavily urbanized area and includes an extensive network of unnamed hiking footpaths and horseback riding trails, scenic roads,

Western Ridge Trail, access to the horse stables and equestrian field, the Rock Creek Information Center, the Nature Center, and the Planetarium.

Five areas at the northern end of the project corridor are part of the NPS Fort Circle Parks system, parks dedicated to preserve the chain of defenses set up to protect Washington during the Civil War. Three of the land parcels comprising the park near the project area occur west of the end of the Broad Branch Road (Figure 3-14). One area occurs south of Broad Branch Road and north of Linnean Avenue. The fifth area occurs on the north side of Broad Branch Road and west of 27th Street, ending at the property boundary with the Ivory Coast ambassador's residence. One former parcel in the NPS Fort Circle Parks system was transferred to the District Department of Recreation (DPR).

The current (2004) *Fort Circle Parks Final Management Plan* includes the development of a trail connecting the sites of civil war fortifications and the green corridor of the Fort Circle Parks system. The intention to connect the sites with a trail was first recorded in 1902 when the Fort Circle Drive was proposed in the *McMillan Commission Report*. Although the drive was started, it was never completed, and in the 1968 *Fort Circle Parks Master Plan* a bicycle/pedestrian trail was proposed in lieu of the Fort Circle Drive. Only a portion of this trail has been completed – the segment between Fort Mahan and Fort Ricketts in the southeast. The portion of the proposed trail would enter the project area from Rock Creek Park at 27th Street and follow Broad Branch Road to Fort Circle Park at 36th Street.

DISTRICT PARKS

Triangle parks are formed at street intersections across the District. These parks are maintained by the District DPR in partnership with DDOT. The District DPR maintains two triangle parks in the current project area: one at the intersection of Nevada Avenue and Broad Branch Road, NW (Reservation DPR2083) and the large, landscaped traffic island at the intersection of Brandywine Street and Broad Branch Road (Reservation DPR0540). The traffic island at the intersection of Brandywine Street is maintained by the District DPR but occurs within DDOT right-of-way. The park consists of maintained grass lawn, a few trees, and some small shrubs. The park is publicly owned and publicly accessible, however, the traffic island/triangle park primarily provides green space, not recreational area. Any recreational use is incidental, secondary, or occasional.

UTILITIES AND INFRASTRUCTURE

The following inventory of existing utilities and infrastructure was compiled using data supplied by DDOT and supplemented with field observation and additional information gathered from the various utility owners/agencies.

WATER AND SEWER AUTHORITY (DC WATER)

Typically in the District of Columbia, waterlines and sewer lines are owned and maintained by DC Water, while the storm drain system is owned by DDOT and maintained by DC Water. Residents have reported leaking sewer lines in the project vicinity. The water mains and sewer lines within the project area are described further below.

Starting from the south end of the corridor, just south of the Broad Branch Road/Beach Drive intersection, a 33 inch sanitary sewer line from Broad Branch Road joins a 5-foot sanitary sewer line from north on Beach Drive to form a 5-foot-6-inch line running south.

A 15 inch storm drains conveys water from the west side of Broad Branch Road to Broad Branch stream south of the intersection with Ridge Road, and drain the east side of the street north of this culvert.

Shortly north of Ridge Road, the sanitary sewer splits to form a 21-inch pipe which reduces to an 18-inch pipe on the west side of Broad Branch Road, and a 27-inch pipe which reduces to a 21-inch pipe on the east side. A second 18-inch sanitary sewer from north Broad Branch Road connects to both of the previously mentioned lines in this location. A 6-foot box culvert also crosses under Broad Branch Road in this location conveying Soapstone Creek.

Two 18-inch storm drains cross Broad Branch Road draining stormwater from the west side of the road, and a 24-inch storm drain conveys water from Albemarle Street. A 10-inch sanitary sewer from Albemarle Street also joins the lines in this location. The 18-inch sanitary sewer continues north up the east side of Broad Branch Road, and the 21-inch pipe continues north on the west side.

At the location where the Broad Branch Road neighborhood joins Broad Branch Road, a 10-inch sanitary sewer combines with the main lines. A 24-inch storm culvert drains the neighborhood in this area, under Broad Branch Road with an outlet to Broad Branch stream.

A 24-inch storm drain conveys water from Brandywine Street west, just to the south of the intersection with Broad Branch Road. A 12-inch sanitary sewer from Brandywine Street joins the main lines at the intersection. The 18-inch and 21-inch sanitary main lines continue north along Broad Branch Road. Water lines start just south of Brandywine Avenue with a 4-inch waterline on the south side of the intersection meeting an 8-inch waterline that travels along the west side of Broad Branch Road.

An 18-inch storm drain conveys water from the west side of the street north of Brandywine Avenue, and then the 21-inch sanitary sewer narrows to 18 inches. A storm drain conveys water from an alley where Broad Branch Road turns north through a 24-inch outlet to Broad Branch stream. The two 18-inch sanitary sewers continue north on either side of Broad Branch Road. Water mains continue north on the west side of the street.

A tributary to Broad Branch stream is carried through a 42-inch culvert just south of Davenport Street. A 15-inch sanitary sewer form the west joins the main lines at the intersection of Davenport and Broad Branch Road. The two 18-inch main sanitary sewer lines continue north.

Approximately 500 feet north of Davenport Street, and then again 100 feet further north, two 10-inch sanitary sewer lines join the main lines from the west. The two 18-inch main lines continue north along Broad Branch Road. Between the two sanitary sewers, two storm drains meet and run under the road via a 24-inch culvert with an outlet to Broad Branch stream.

Additional culverts drain the west side of Broad Branch Road with two 15-inch and one 12-inch culverts under the road conveying stormwater to the stream between Davenport Street and 27th Street. At 27th Street the sanitary sewers split. A 10-inch line travels north on 27th Street, and a 24-inch line follows Broad Branch Road. A 12-inch water main from the north on 27th Street, follows Broad Branch Road west.

Two 15-inch culverts drain stormwater from the west side of the road to the stream between 27th Street and 30th Street. At the walkway over Broad Branch stream, south of 30th street, a 12-inch sanitary sewer line joins the main line. At this point, the main line reduces to 18-inch going north. At the intersection with 30th Street, a 15-inch sanitary sewer joins the main line, further north the main line increases in size to 21-inch. A three-inch pipe from the water main supplies an area south of 30th Street. The 12-inch water main continues west along Broad Branch with two 6-inch supply lines to the Carnegie Institution, shortly after the 12-inch line turns north.

A 12-inch water main follows Linnean Avenue north up 32nd Street and then turns southwest along Chappell Road.

Broad Branch stream is culverted in a 10-foot x seven-and-a-half foot box culvert just west of 30th Street. Broad Branch stream, from this point to its headwaters including all tributaries, is completely culverted. The remaining storm sewers drain directly to this waterbody from this point to Linnean Avenue as follows: an unknown sized culvert from the north, an 18-inch culvert from the north, a 36-inch culvert from the south, a 15-inch culvert from the north, a 15-inch culvert from Ingleside to the north, a 42-inch culvert from the south conveying the stream from Linnean Playground, a 36-inch culvert from the south, a 24-inch storm drain from Broad Branch, and a storm inlet from Linnean Avenue. Just east of Linnean Avenue, two large storm sewers meet to form the main line for Broad Branch. A 90-inch culvert draining a 36-inch culvert from 32nd Street and a 33-inch culvert from Broad Branch Road which join the 90-inch culvert from the west along Nevada Avenue; and a 7-foot-3-inch culvert from the west that reduces to a 7-foot culvert under Linnean Avenue and continues west.

After 30th Street the sanitary sewer follows the south side of the culvert for Broad Branch stream, with two 5-inch lines running north to the Carnegie Institution. A 12-inch line heads south following the 42-inch stormwater culvert from Linnean Playground. An 18-inch line joins the main line from the east at Linnean Avenue, and the 18-inch line continues north to break into an 18-inch line that follows Nevada Avenue, a 10-inch line that follows Broad Branch Road, and a 10-inch line that follows 32nd Street.

WASHINGTON GAS

A 6-inch line starts on the west side of Broad Branch Road, just south of the Broad Branch Road community (south of Brandywine Avenue) with a 2-inch feeder line to the community. The main 6-inch line follows Brandywine Avenue with another 3-inch feeder line to the south, and splits with a 6-inch line following Brandywine Avenue and a 6-inch line running north along the west side of Broad Branch Road ending approximately 600 feet to the north.

Gas lines start again with a 6-inch main line on the south side of Broad Branch Road and a 4-inch feeder line to the Carnegie Institution. A second 6-inch line enters the north side of Broad Branch Road from the Carnegie Institution and continues on the south edge of the street west. The line on the north splits to supply Broad Branch Road going north with a 6-inch line, and a 6-inch line following Nevada Avenue out of the project area. The southern line splits to supply Linnean Avenue with a 6-inch line and then splits again to form two 6-inch lines following Nevada Avenue out of the project area.

POTOMAC ELECTRIC POWER COMPANY (PEPCO)

PEPCO owns and maintains overhead and underground facilities within the project limits. Starting at Beach Drive, overhead lines follow the east side of Broad Branch Road, with lines connecting to a private home and the Broad Branch Road community south of Brandywine Avenue. A connector from the main line also supplies Brandywine Avenue. The main line continues up the east side of Broad Branch Road with four lines connecting to residences and one line supplying Davenport Street. Two lines supply residences to the west and the line splits at 27th Street with the main line remaining on the north/east side of Broad Branch Road. Three more lines supply residences on the north and three to the south before the line splits following all roads at the intersection of Broad Branch Road, 32nd Street, Linnean Avenue, and Nevada Avenue.

VERIZON COMMUNICATION (VERIZON) AND COMCAST CABLE (COMCAST)

VERIZON and COMCAST maintain their overhead facilities on both joint-use PEPCO poles and their own poles. Starting at Beach Drive, lines follow the east side of Broad Branch Road and then switch over to the west side shortly north of Ridge Road NW, and then head southwest toward Albemarle Street.

STREET LIGHTS

Existing street lights are leased, and the arms and the fixtures are installed on PEPCO wood poles. The presence of street lights is sporadic and they are only provided at intersections and along the mainline where existing PEPCO poles permit.

3.4 TRANSPORTATION

Each of the elements of the transportation system – pedestrian and bicycle facilities, the roadway network, and transit services – is described in the subsections below (**Figure 3-15**).

3.4.1 PEDESTRIAN AND BICYCLE NETWORK

Broad Branch Road does not currently have sidewalk facilities, which poses a safety concern for pedestrians. Pedestrian and bicycle counts were conducted concurrently with the study's traffic turning movement counts which occurred during morning and evening peak periods in December 2012. Counts were conducted at intersections along Broad Branch Road, generally in 15 minute intervals. Counts were conducted at five intersections during the morning peak period and at the northern- and southern-most intersections during the evening peak period (limited due to safety concerns for the study team). Peak pedestrian and bicycle counts per intersection were extrapolated to obtain counts per hour and the morning and afternoon counts were combined to develop an average per hour for the project corridor. Broad Branch Road averages 30 pedestrians

Figure 3-15. Traffic/Roadway Features

per hour and 21 cyclists per hour, with most observed at the northern and southern termini of the project area. The data reflect an average that could vary significantly based on seasonality, day of the week, and time of day, i.e., counts could be higher during warmer weather, on weekends, and at times others than morning and evening commutes.

Recent DC legislation (Section 1.2.4) has prompted the need for pedestrian accommodations within the corridor. Furnishing sidewalks along Broad Branch Road would also conform to the District's Complete Street Program, a policy document that encourages the provision of sidewalks along DC streets.

The entrance to Soapstone Valley foot trail intersects Broad Branch on the west side of the road just north of Ridge Road, NW. The southern terminus of the project area is located at the northern terminus of Rock Creek Trail, an off street multipurpose trail. The Western Ridge Trail is accessible from the east side of the road just south of Ridge Road and provides access to the rest of the Rock Creek Park trail system. There is no parking located in this area, nor are there sidewalks or marked crossings connecting these trails which are located on this narrow road with short sight distances.

The southern portion of Broad Branch Road (south of Brandywine Street) is currently mapped as a bike route in the DC Bicycle Master Plan Proposed Bicycle Facilities Map with no on-street bike lanes; however, the entire project area is signed as an on street bike route. The 2011 DC Bike Map lists the road as having poor biking conditions. Generally, the rating of biking conditions is based on the classification of the roadway facility, and collector roadways like Broad Branch Road usually receive a fair rating. The northern terminus of the project is located near an on street signed bike route running from Nevada Avenue, NW to 36th Street, NW, mapped as having fair suitability for bikes. The southern terminus of the project area is located near a signed bike route on Beach Drive, an on street signed route with fair suitability for bikes.

As indicated above, an average of 21 bikes per hour use Broad Branch Road during the peak commuting periods.

3.4.2 Road Network

Traffic volumes, function, and character of the roadway vary over the 1.5-mile length of Broad Branch Road. Broad Branch is functionally classified as a collector, carrying daily traffic volumes from the northernmost intersection with Nevada Avenue/ 32nd Street/Linnean Avenue to Grant Road/Davenport Street of 3,200 vehicles per day. South of Grant Road/Davenport Street to Brandywine Street, the daily traffic volume is 4,870 per day. Between Brandywine Street and Beach Drive/Blagden Avenue, daily traffic volume is 6,500 vehicles per day.

The topography also varies along the roadway corridor, with several vertical curves (12 out of 35) and horizontal curves (9 out of 28) that do not meet current design criteria, which can limit sight distance and contribute to roadway safety concerns. Travel lanes are generally 10 feet wide and the existing roadway cross sections do not vary significantly in the project corridor.

Traffic control along the roadway is stop-controlled, with stop signs at the intersections of Nevada Avenue/ 32nd Street/Linnean Avenue; 27th Street; and Grant Road/Davenport Street. At its southernmost point, Broad Branch Road terminates at Beach Drive/Blagden Avenue at a stop

sign. North of Beach Drive/Blagden Avenue, Ridge Road connects Broad Branch Road to Rock Creek Park.

Brandywine Street and Davenport Street provide the primary access into the Forest Hills neighborhood on the west. Davenport Street continues through Rock Creek Park as Grant Road. Park access is also provided by 27th Street in the northern part of the project area and Ridge Road in the southern part of the project area, both of which terminate at Broad Branch Road.

Traffic counts were collected as part of the study to verify traffic volumes and to provide input to operational and environmental analyses. Turning movement counts were conducted at the following intersections, as summarized in **Table 3-8**:

- Broad Branch Road and Nevada Avenue/32nd Street/Linnean Avenue
- Broad Branch Road and 27th Street
- Broad Branch Road and Grant Road/Davenport Street
- Broad Branch Road and Brandywine Street
- Broad Branch Road and Beach Drive/Blagden Avenue

The purpose of the turning movement counts was to identify the split of traffic at each approach. Fifteen-minute counts were conducted within the morning and evening peak hours to establish these splits. Some intersections were not counted due to safety concerns for the analysts conducting the data collection. These intersection splits were calculated using the available data and commuter-oriented nature of this corridor.

Table 3-8. Intersection Turning Movement Counts

INTERSECTION WITH BROAD BRANCH ROAD	PEAK HOUR*	NORTHBOUND				SOUTHBOUND 1				SOUTHBOUND 2				EASTBOUND				WESTBOUND			
		LEFT	THRU 1	THRU 2	RIGHT	LEFT 1	LEFT 2	THRU	RIGHT	LEFT	THRU	RIGHT 2	RIGHT 2	LEFT 1	LEFT 2	THRU	RIGHT	LEFT	THRU	RIGHT 1	RIGHT 2
Nevada Avenue/32nd Street/Linnean Avenue, NW	AM	2	0	0	7	0	0	1	2	3	21	42	0	1	6	18	8	4	0	37	0
	PM	7	1	0	2	0	0	0	1	2	38	0	0	1	3	69	4	9	3	49	0
27th Street, NW	AM	17	-	-	13	22	-	-	12	-	-	-	-	-	-	-	-	36	-	49	-
	PM	**	**	-	**	**	-	**	**	-	-	-	-	**	-	**	**	**	**	**	-
Grant Road/Davenport Street, NW	AM	6	24	-	2	1	-	19	4	-	-	-	-	2	-	6	2	26	39	5	-
	PM	**	**	-	**	**	-	**	**	-	-	-	-	**	-	**	**	**	**	**	-
Brandywine Street, NW	AM	37	18	-	-	-	-	47	37	-	-	-	-	5	-	-	12	-	-	-	-
	PM	**	**	-	**	**	-	**	**	-	-	-	-	**	-	**	**	**	**	**	-
Beach Drive/Blagden Avenue, NW	AM	100	41	-	27	35	-	124	4	-	-	-	-	24	-	39	105	37	4	22	-
	PM	68	112	-	32	11	-	19	2	-	-	-	-	3	-	38	48	8	132	16	-

* AM Peak Hour is between 7:30 - 8:30 AM and PM Peak Hour is between 5:30 - 6:30 PM.

** These approaches were not counted due to safety concerns for the analysts.

In addition to existing DDOT traffic count data, 48-hour counts were collected in February 2011 on Broad Branch Road north of 27th Street and south of Grant Road to determine typical hourly traffic flows.

A review of the traffic volumes suggests that there is adequate capacity in the existing roadway network; therefore, capacity improvements are not recommended as part of the Broad Branch Road improvements. As shown in Figure 3-12, existing traffic volumes are more than two times heavier at the southern end of Broad Branch Road because this section of the corridor collects commuter traffic from the adjacent neighborhoods to locations east of Rock Creek Park. The higher traffic volumes on this section, combined with the lack of space or adequate facilities for pedestrians and cyclists, present a growing safety problem in the entire roadway corridor. The Beach Drive/Blagden Avenue intersection operates at level of service (LOS) F in both the morning and evening peak hours due to turning movements associated with commuter traffic traveling to and from downtown Washington, D.C.[1] The same holds true for the intersection with Davenport Street/Grant Road in the morning peak period, during which eastbound traffic experiences high levels of delay to turn onto Broad Branch Road.

3.4.3 TRANSIT

Currently there are no bus lines in the project area.

3.5 AIR QUALITY

Air quality in the existing Broad Branch Road project area was assessed by analyzing conformity with regional standards for indicators including carbon monoxide (CO), particulate matter less than or equal to 10 microns and less than or equal to 2.5 microns (PM10 and PM2.5), Mobile Source Air Toxics (MSATs), and ozone precursors (nitrogen oxides [NOx] and Volatile Organic Compounds [VOC]) (greenhouse gases). Under the Clean Air Act, EPA establishes air quality standards to protect public health and the environment. EPA has set national air quality standards for six common air pollutants. These include: carbon monoxide, ozone, lead, nitrogen dioxide, particulate matter (also known as particle pollution), and sulfur dioxide.

3.5.1 REGIONAL CONFORMITY

The rehabilitation of Broad Branch Road is included in the Transportation Improvement Program (TIP) for the Metropolitan Washington Region (Fiscal Years 2011 to 2016), and the scope of the project is consistent with the regional analysis included in the TIP. The National Capital Region 2010 Constrained Long-Range Transportation Plan (CLRP) and the 2011-2016 TIP have been determined by the Metropolitan Washington Council of Governments (MWCOG) to conform to the intent of the State Implementation Plan (SIP).

[1] Level of Service (LOS) is a measure used by traffic engineers to characterize the operating conditions of a roadway or intersection. Level of Service (LOS) is ranked from A to F, where A represents free flow or negligible delay and F represents extensive delay and congestion.

3.5.2 PROJECT-LEVEL CARBON MONOXIDE (CO) CONFORMITY

The District is currently in maintenance for the CO air quality standard. Under 40 CFR § 93.126, the Broad Branch Road project is except from air quality conformity determination because it will not add capacity and it conforms to or all of the following features:

- Projects that correct, improve, or eliminate a hazardous location or feature.
- Shoulder improvements.
- Increasing sight distance.
- Pavement resurfacing and/or rehabilitation
- Widening narrow pavements or reconstructing bridges (no additional travel lanes).

3.5.3 PROJECT-LEVEL FINE PARTICULATE MATTER ($PM_{2.5}$) CONFORMITY

The Broad Branch Road project is located in the Washington DC – MD-VA nonattainment area for the $PM_{2.5}$ annual standard. The area was designated as nonattainment for $PM_{2.5}$ on January 5, 2005 by the EPA, effective on April 5, 2005 and applied on April 5, 2006. On March 10, 2006, EPA issued amendments to the Transportation Conformity Rule to address localized impacts of particulate matter: *$PM_{2.5}$ and PM_{10} Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} National Ambient Air Quality Standards (NAAQS)* (71 FR 12468). These rule amendments, listed below, require the assessment of localized air quality impacts of Federally-funded or approved transportation projects in PM_{10} and $PM_{2.5}$ nonattainment and maintenance areas deemed to be *projects of air quality concern* as identified in 40 CFR 93.123(b)(1):

(i) New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;

(ii) Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Based on these definitions in 40 CFR 93.123(b)(1), the Broad Branch Road project is not a *project of air quality concern*.

3.5.4 MOBILE SOURCE AIR TOXICS

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). MSATs are a subset of the 188 air toxics defined by the Clean Air Act (CAA). MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The FHWA *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA* (FHWA, 2009) defines three levels of analysis based on a tiered approach for analyzing MSAT in environmental documents. The Broad Branch Road project falls into the first category of "Projects with No Meaningful Potential MSAT Effects or Exempt Projects" based on the fact that this project will have "no meaningful impacts on traffic volumes or vehicle mix." Therefore, no analysis or discussion of MSAT is needed for the project.

3.5.5 GREENHOUSE GAS (GHG)

Carbon dioxide is the principle man-made greenhouse gas, representing approximately 82 percent of all greenhouse gas emissions in the United States (EIA, 2010). Among other sources, approximately 34 percent of the total carbon dioxide is produced by the burning of fossil fuel (gasoline) in internal combustion engines in motor vehicles. The Broad Branch Road project area is currently in moderate nonattainment of the federal NAAQS for ozone.

3.6 NOISE AND VIBRATION

Noise levels are important design parameters in the planning of road and highway improvements and are subject to federal regulations. Noise criteria applicable to the proposed project are set forth in 23 CFR 772 and Section 772 of the Federal-Aid Highway Policy Guide.

3.6.1 NOISE CRITERIA

As stated in the *District Department of Transportation Noise Policy* (January 10, 2011), a "sensitive receptor is a noise-sensitive location registering measurable sound levels as described in 23 CFR 722 – typically a residence or other use that would be negatively affected by noise." Based on this definition, sensitive land uses located within the project area include a mix of residential, park, and institutional land uses, which can be categorized as Activity Category B based on Noise Abatement Criteria (see **Table 3-9**).

3.6.2 EXISTING CONDITIONS

Existing noise measurements were conducted along Broad Branch Road at seven representative locations during peak traffic periods to determine ambient noise levels within the corridor. Short-term measurements were collected in accordance with the guidelines contained in the FHWA *Highway Traffic Noise: Analysis and Abatement Guidance (June 2010)* and District of Columbia

Municipal Regulations (DCMR) Chapter 29, Noise Measuring Test Procedures, and as described in Section 6.2.2 of the *District Department of Transportation Noise Policy* (January 10, 2011).

Table 3-9. FHWA Noise Abatement Criteria

ACTIVITY CATEGORY	L_{EQ}(H) (DBA)*	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Residential
C	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included A-D.

*Hourly Equivalent A-weighted Sound Level

With the exception of the Carnegie Institution of Science, Hillwood Museum and Gardens, Rock Creek Park, Soapstone Valley, Fort Circle Parks, and two small District maintained triangle parks, all land uses adjacent to Broad Branch Road are residential. One facility, Ingleside at Rock Creek, is a multi-family residential facility. Sensitive receptors were selected to cover the Carnegie Institution of Science, the multi-family residential facility (Ingleside at Rock Creek), typical single-family residences, Rock Creek Park, Hillwood Museum, and near the gatehouse on the property of the Italian ambassador's residence, one of the five foreign embassy residences in the project area. The single family residences are representative of that land use type along the length of Broad Branch Road. The receptor locations are depicted on **Figure 3-16**.

The predominant noise sources in the project area are birds and insects, flowing water in the adjacent Broad Branch stream, street activities normal to suburban environment, airplanes, building HVAC units, landscaping tools, and traffic on nearby roadways. As shown in **Table 3-10**, existing measured noise levels in the project area range from 55 to 62 decibels (dBA), which does not approach or exceed the FHWA noise abatement criteria (NAC) of 67 dBA.

Table 3-11 provides a description of common noise levels. As noted above, the activity level along Broad Branch Road is considered Activity Category B, which includes picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. If traffic were to cause noise levels above 67 dBA in a Category B area, noise abatement would be required.

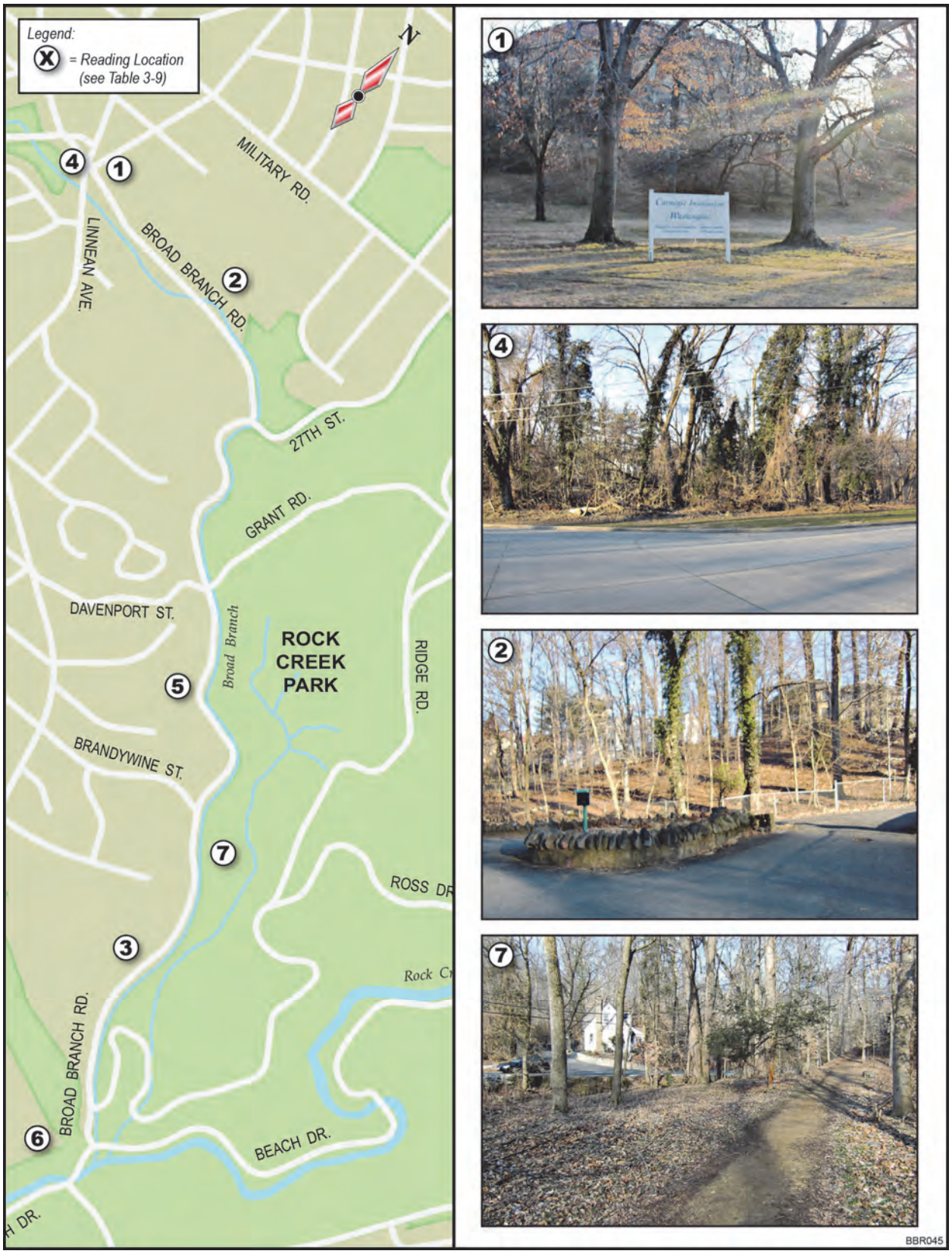


Figure 3-16. Noise Sensitive Receptor Locations

Table 3-10. Noise Sensitive Receptor Measurement Levels

SITE	LOCATIONS	15-MIN L_{EQ} (DBA)
1	Carnegie Institution of Science	55
2	Ingleside at Rock Creek (multifamily residence)	58
3	Gatehouse at Villa Firenze (Residence of the Italian Ambassador)	62
4	Single-family residence (north end)	58
5	Single-family residence (near Brandywine Street)	58
6	Hillwood Estate Museum and Gardens	58
7	Rock Creek Park	58

Table 3-11. Common Noise Levels

NOISE SOURCE	SOUND LEVEL (DBA)	SUBJECT IMPRESSION
Jet aircraft taking off	120	Uncomfortably Loud
Heavy truck / motorcycle	90	Very Loud
Food blender	90	Very Loud
Lawn mower / vacuum cleaner	70	Moderately Loud
Light auto traffic / dishwasher	50	Quiet
Quiet urban (night/library)	30	Very Quiet
Acoustic test chamber	10	Just Audible
	0	Threshold of Hearing

3.7 HAZARDOUS WASTE/MATERIALS

A review of previous studies, the EPA online website, and DDOE information indicates that there are no areas of concern for hazardous waste/materials within the project vicinity. According a review of available materials, none of the sites located within the vicinity of the project pose any special risks or concern. Field reviews will be conducted to confirm that no additional sites within the vicinity of the project corridor nor signs of previous spills.

The EPA Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system for hazardous waste handlers, lists one Conditionally Exempt Small Quantity Generator site (**Table 3-12**) along the project corridor. Through the RCRAInfo program, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. The DDOE lists one underground storage tank within the project area.

3.8 ENERGY CONSERVATION

There are currently no known energy conservation measures being taken in the project corridor.

Table 3-12. Sites along Broad Branch

NAME	ADDRESS	ENVIRONMENTAL CONCERN	DATE LAST UPDATED
Carnegie Institution of Washington (EPA, 2010a)	5241 Broad Branch Rd, NW Washington, DC 20015	Hazardous Waste Biennial Reporter (Active)	12/31/2001
		CESQG (Active)	04/15/2010
Hillwood Estate, Museum and Gardens Facility #3000536 (DDOE, 2010 a and b)	4155 Linnean Ave, NW Washington, DC 20008	Active Underground Storage Tank	03/ 2010

CESQG - Conditionally Exempt Small Quantity Generators generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste.

Hazardous Waste Biennial Reporter - RCRA Sections 3002 and 3004, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), require reporting to EPA or to authorized States at least every two years. Hazardous waste Large Quantity Generator (LQGs) and Transportation, Storage, Disposal Facilities (TSDFs) must report information on the type, source, form, quantities, and management of hazardous wastes generated on site and on the type, quantities, and management of hazardous wastes received from off site. - https://www.ess-home.com/regs/rcra-waste-report.aspx

4 ENVIRONMENTAL CONSEQUENCES

According to the Council on Environmental Quality (CEQ) guidelines (40 CFR Section 1500-1508), "the determination of the significant impact is a function of both context and intensity." Significance of an action is analyzed within the setting of an action, or context, including regional, local, or site-specific. Intensity refers to severity of an impact which is analyzed in terms of type, quality, and sensitivity of a particular resource. The appropriate class of environmental documentation is determined by level of significance, which is established through impact analysis of each resource. This "Environmental Consequences" chapter addresses the potential impacts to each of the resource areas (i.e., impact topics) discussed under the "Affected Environment" chapter for the No Action and Candidate Build Alternatives.

As stated in 40 CFR 1508.27(a), the analysis of significance as used in National Environmental Policy Act (NEPA) requires both the context and intensity of an action.

a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

    1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
    2. The degree to which the proposed action affects public health or safety.
    3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
    4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
    5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
    6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

4.1 NATURAL RESOURCES

4.1.1 GEOLOGY, SOILS, AND TOPOGRAPHY

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, the improvements to Broad Branch Road would be limited to maintenance, such as the removal of fallen trees and other debris caused by the deterioration of the roadway, and the resurfacing of the roadway. This maintenance work would not impact the topography, geology, or soils, unless road bed stabilization is necessary to maintain the site conditions or provide access for construction vehicles. Uncontrolled runoff from the roadway and adjacent parcels would continue to result in pavement deterioration, and the topography in Rock Creek Park would continue to be altered through erosion without proper stormwater management. Runoff would continue unabated and alter the natural environment; therefore, the No Action Alternative would have a minor, long-term impact to geology, soils, and topography.

CANDIDATE BUILD ALTERNATIVES

In the District, land disturbing activities are regulated and require a construction permit from the District prior to engaging in any such activities. In accordance with the District of Columbia Municipal Regulations (DCMR) Title 21-Chapter 5 Water Quality and Pollution, an erosion and sediment control plan is required for 50 square feet of land disturbance and a stormwater management plan is required for 5,000 square feet of land disturbance. Construction activities will also be regulated for compliance.

For all Candidate Build Alternatives, construction would extend beyond the existing roadway footprint to either side. The majority of land within the limits-of-disturbance has been previously graded and paved over from the construction and maintenance of the existing Broad Branch Road. The northern end is previously disturbed fill, the east side consists mainly of steep slopes to Broad Branch stream, and the west side immediately beyond the road cut is mostly undisturbed forested slopes leading to residential lots.

Much of the project area is currently experiencing moderate to severe erosion. Given the topographic and geologic conditions within the project area, roadway construction limitations such as moderate to high erosion potential, steep slopes, frost action, low strength, depth to bedrock, depth to saturation, and flooding will need to be taken into account for this project.

Areas of disturbance associated with each alternative are presented in **Table 4-1**.

Table 4-1. Areas of Disturbance (in square feet)

ALTERNATIVE & OPTION	EXISTING PAVED FOOTPRINT	ALTERNATIVE PAVED FOOTPRINT	ADDITIONAL IMPERVIOUS SURFACE	LIMITS OF DISTURBANCE	AREA OF DISTURBANCE OUTSIDE OF EXISTING PAVED FOOTPRINT	UNPAVED AREA OF DISTURBANCE WHICH WILL RENATURALIZE
No Action	170,738	170,738	0	0	0	0
Alternative 2	170,738	204,089	33,351	309,414	138,676	105,325
Alt 2, Option A (wall)[1]	0	1,000	1,000	-27,838[2]	1,000	-27,838[2]
Alt 2, Option B (sidewalk) [1]	0	3,547	3,547	4,016	4,016	469
Alternative 3	170,738	253,524	82,786	382,411	211,673	128,887
Alternative 4	170,738	294,877	124,139	389,914	219,176	95,037
Option C[1]	Y-Intersection by Alternative	T-Intersection by Alternative				
Alt 2	20,700	16,212	- 4,488[3]	No change	No change	4,488
Alt 3	20,993	17,229	- 3,764[3]	No change	No change	3,764
Alt 4	21,810	18,046	- 3,764[3]	No change	No change	3,764

[1]Areas provided for the options represent the change in area compared to implementation of the alternatives without each option (i.e. the difference rather than the total area).

[2]Reduction of disturbance with incorporation of Option A into Alternative 2.

[3]Reduction of paved area with incorporation of Option C.

ALTERNATIVE 2

This alternative would result in minor long-term impacts to geology, soils, and topography as it would disturb approximately 138,676 square feet (3.18 acres) that have not been previously graded for facility construction. The majority of this disturbance occurs within District Department of Transportation (DDOT) right-of-way with the exception of small areas (249 square feet total) associated with grading only that would occur outside the existing right-of-way. Alternative 2 would include the addition of stormwater management alleviating future erosion and damage due to impervious surfaces and run-off, resulting in long-term beneficial impacts to geology, soils, and topography.

ALTERNATIVE 3

This alternative would result in minor long-term impacts to geology, soils, and topography as it would disturb approximately 211,673 square feet (4.86 acres) that have not been previously graded for facility construction. The majority of this disturbance occurs within DDOT right-of-

way with the exception of limited areas (28,827 square feet total) associated with grading and construction that would occur outside the existing right-of-way. Alternative 3 would include the addition of stormwater management alleviating future erosion and damage due to impervious surfaces and run-off, resulting in long-term beneficial impacts to geology, soils, and topography.

ALTERNATIVE 4

This alternative would result in minor long-term impacts to geology, soils, and topography as it would disturb approximately 219,176 square feet (5.03 acres) that have not been previously graded for facility construction. The majority of this disturbance occurs within DDOT right-of-way with the exception of areas (41,823 square feet total) associated with grading and construction that would occur outside the existing right-of-way. Alternative 4 would include the addition of stormwater management alleviating future erosion and damage due to impervious surfaces and run-off, resulting in long-term beneficial impacts to geology, soils, and topography.

OPTIONS

Alternative 2 Option A - Retaining Wall would include approximately 1,000 square feet of impervious surface outside the existing paved area, but would reduce the area of disturbance by approximately 0.64 acre.

Alternative 2 Option B - Sidewalk would increase the limits of disturbance by about 4,000 square feet (0.09 acre) to allow for the addition of a sidewalk from Soapstone Creek Trail to the parking lot near Beach Drive.

Option C - T-Intersection at Brandywine Street. Reconfiguring the existing Y-intersection at Brandywine Street into a T-intersection would not increase the area of disturbance as construction would occur within the footprint of the existing intersection. The completed intersection would decrease the amount of impervious surface and increase the volume of stormwater able to be treated by incorporating rain gardens on each side of the intersection, reducing the erosive velocities of water in the project area. Option C would have minor, long-term, beneficial impacts to geology, soils, and topography.

AGRICULTURAL LANDS, PRIME, AND UNIQUE FARMLAND SOILS

ALTERNATIVES 1, 2, 3, 4, ALTERNATIVE 2 OPTIONS AND OPTION C

There are no prime farmlands within the project area; therefore, there would be no impact to farmland from the No Action Alternative, Candidate Build Alternatives, or design options.

4.1.2 WATER RESOURCES

DRINKING WATER AND GROUNDWATER

No drinking water resources occur in the project vicinity; therefore none of the alternatives would have an impact on this resource.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

No addition of impervious surfaces and no improvements to the existing stormwater sewers would occur under this alternative. No changes to groundwater volume or quality would be

expected under the No Action Alternative. No drinking water resources occur in the project vicinity; therefore, this alternative would not have an impact.

ALTERNATIVES 2, 3, 4 AND ALTERNATIVE 2 OPTIONS

All of the alternatives would result in minor beneficial impacts. All alternatives include a stormwater sewer with perforations that would allow for some of the stormwater to naturally infiltrate as it travels through the culverts. This type of system would compensate for some of the impervious surfaces in the area and allow for groundwater regeneration closer to historic volumes. A stormwater swale/linear rain garden would be included as a part of this project to compensate for impervious surfaces. These facilities will allow for additional recharge and filtration of pollutants that currently drain directly into the local surface water system. These stormwater facilities are known to filter 50 to 65 percent of unwanted contaminants, resulting in resulting in minor, long-term beneficial impacts to groundwater.

No drinking water resources occur in the project vicinity; therefore, this alternative would not have an impact.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Reconfiguring the existing Y-intersection at Brandywine Street into a T-intersection would not increase the area of disturbance as construction would occur within the footprint of the existing intersection. The completed intersection would decrease the amount of impervious surface and increase the volume of stormwater able to be treated by incorporating rain gardens on each side of the intersection. The additional rain gardens at the reconfigured intersection in Option C would allow for additional recharge and filtration of pollutants that currently drain directly into the local surface water system. Option C would have minor, long-term, beneficial impacts to groundwater.

SURFACE WATER

Actions potentially affecting surface waters are regulated at the federal and state (including the District) levels in accordance with Section 404 of the Clean Water Act. General impacts to water resources from roadway construction would increase with the expansion of area needed for construction, as shown in **Table 4-2**. In-stream work for this project would include replacement of the crossing at Soapstone Creek, reconstruction of culvert outfalls to Broad Branch, restoration or construction of new retaining walls along Broad Branch, and installation of water quality catch basins to screen debris and filter sediment before discharging runoff to the existing outfalls. Such in-stream work will require permits with the U.S. Army Corps of Engineers (USACE) and District Department of the Environment (DDOE) in accordance with Sections 402 and 404 of the Clean Water Act.

Table 4-2. Stream Limits of Disturbance (in linear feet)

STREAMS IN THE PROJECT AREA	ALTERNATIVE		
	2	3	4
Unnamed Tributary to Broad Branch	0	10	14
Broad Branch	244	284	509
Soapstone Creek	52	73	76
Total	296	367	599

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Surface waters in the area are currently receiving increased sediment, nutrients, and chemicals that are washed directly from Broad Branch Road and the upstream neighborhoods to the north and west. In addition, the lack of stormwater infiltration results in increased water volume and velocity, causing scouring of slopes and channels and degradation of water quality and roadway infrastructure. Under the No Action Alternative, these impacts would not be corrected and would continue to affect local streams and surface waters.

ALTERNATIVES 2, 3, 4 AND ALTERNATIVE 2 WITH OPTIONS

The Candidate Build Alternatives would result in minor beneficial long-term impacts to surface waters. General impacts to water resources from roadway construction would be similar among the alternatives, the primary difference being the amount of impervious surface that would occupy the project area, and the length of retaining wall required along the edge of Broad Branch (see Table 4-1).

Although the Candidate Build Alternatives would result in an increase of impervious surfaces, they all incorporate stormwater systems that will accommodate the infiltration of the first 1.2 inches of stormwater from the project area (provided that studies during design confirm that soils are adequately pervious and the water table is low). As a part of this project, an erosion and sediment control plan, stormwater management plan, and a "treatment train" of best management practice (BMP) techniques will be developed. Stormwater treatment measures will allow for infiltration of stormwater to more closely match pre-urbanization conditions for the area and reduce the amount of additional sediment, chemicals, nutrients, and heat in run-off that comes from impervious surfaces, resulting in minor, long-term benefits to surface water.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Reconfiguring the existing Y-intersection at Brandywine Street to a T-intersection would decrease the amount of impervious surface and increase the volume of stormwater able to be treated by incorporating rain gardens on each side of the intersection. The addition of these rain gardens would enhance other stormwater treatment measures being proposed under the Candidate Build Alternatives by increasing the volume of stormwater infiltration and reducing sediment, chemicals, nutrients, and heat in run-off. Option C would have minor, long-term, beneficial impacts to groundwater.

FLOODPLAINS

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

A portion of the existing Broad Branch Road lies within the 10-year floodplain for Broad Branch stream and has created significant erosion damage to the roadway. The No Action Alternative would not introduce new development within the floodplain; however, scouring of stream beds and sedimentation in the floodplain, and greater stormwater volumes and velocities than accommodated previous to urbanization in this area, due to impervious surfaces and lack of stormwater infrastructure would continue. Floodplain values and functions would continue to be affected and local erosion would continue due to lack of stormwater management structures. The No Action Alternative would result in moderate long-term impacts to the floodplain's

ability to handle existing water levels as well as continued structural degradation to existing culverts.

ALTERNATIVES 2, 3, 4, AND ALTERNATIVE 2 OPTIONS

In accordance with Executive Order 11988, Floodplain Management, and corresponding National Park Service (NPS) Floodplain Management Director's Order (DO) 77-2, Floodplain Management, floodplain encroachments should be avoided or minimized to the maximum extent practicable. Federal agencies are required to reduce the risk of flood loss, minimize flood impacts to human safety, health, and welfare and to restore and preserve beneficial floodplain values and functions.

All of the Candidate Build Alternatives would have minor short-term impacts and long-term beneficial impacts to local floodplains associated with Broad Branch stream. Each of the Candidate Build Alternatives would require temporary work within the floodplain for stabilizing or reconstructing retaining walls and outfall headwalls along Broad Branch, and for the replacement of the existing deteriorating culvert over Soapstone Creek. Due to roadway elevation, the project area at the confluence of Soapstone Creek and Broad Branch stream will remain within the 10-year floodplain. This means that during a flood event that happens with the frequency of approximately every 10 years, the waters will overtop the road at the location of the replacement culvert at Soapstone Creek. Although the new culvert will not solve the current flooding problems, it will alleviate them with a larger opening that will convey more water during regular rain events. The wider opening will reduce the frequency of water backup at the culvert and allow for more natural flow to Broad Branch stream which will reduce erosion and damage to infrastructure.

The effective sizing of new culverts and stabilization of outfall sites will reduce erosion, and the addition of rain gardens will bring stormwater levels closer to predevelopment levels. The resulting improvements to geomorphology, reestablishment of riparian buffers, and improved floodplain functions will result in minor, long-term beneficial impacts to the Soapstone Creek and Broad Branch floodplains. The area of impervious surfaces within the floodplain will increase due to the addition of new pavement, curbs, gutters, sidewalk and/or bike lanes in each of the Candidate Build Alternatives and the new sidewalk included as Option B (see **Table 4-3**); however, these increases will have no short-term or long-term impacts on the functional values of the associated floodplain.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Reconfiguring the existing Y-intersection at Brandywine Street to a T-intersection would decrease the amount of impervious surface and increase the volume of stormwater able to be treated by incorporating rain gardens on each side of the intersection. The addition of these rain gardens would enhance other stormwater treatment measures being proposed under the Candidate Build Alternatives and return stormwater levels closer to predevelopment levels, leading to improved floodplain functions. Option C would have minor, long-term, beneficial impacts to the Soapstone Creek and Broad Branch floodplains.

Table 4-3. Floodplain Encroachments (impervious area in square feet)

ALTERNATIVE	EXISTING IMPERVIOUS AREA WITHIN FLOODPLAIN	PROPOSED IMPERVIOUS AREA WITHIN FLOODPLAIN	ADDITIONAL FLOODPLAIN ENCROACHMENT
No Action	58,300	0	0
2	58,300	59,998	1,698
2, Opt A (wall)	0	0	0
2, Opt B (sidewalk)	0	546	546
3	58,300	63,555	5,255
4	58,300	70,661	12,361
Option C (T-intersection)	0	0	0

WATER QUALITY

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under this alternative, Broad Branch Road would not be reconstructed to include any additional stormwater management systems and as a result, erosion and chemical and nutrient loading would continue. Although roadbed erosion would continue to occur, there would be no discernable change in the existing impervious surface within the study area. The stormwater volumes and channel velocities would continue unabated, resulting in continued erosion of the stream channel, sedimentation from overland erosion, and loss of riparian vegetation. Therefore, the No Action Alternative would continue to have minor, long-term impacts to water resources quality due to continued erosion, and sedimentation.

ALTERNATIVES 2, 3, 4, AND ALTERNATIVE 2 OPTIONS

All Candidate Build Alternatives would result in moderate, long-term, beneficial impacts to local water quality and minor to negligible benefits downstream. Although Candidate Build Alternatives would result in an increase of impervious surfaces (Table 4-3), the reconstruction of Broad Branch Road would incorporate Low Impact Development (LID) techniques that include infiltration of up to the first 1.2 inches of stormwater to meet the required stormwater retention volume (SWRv) for the project, approximately 15,443 cubic feet of water.

One of the goals of the proposed project is to improve water quality and stormwater management in this area to alleviate drainage issues and prevent further damage from uncontrolled runoff. As such, a 1000-foot linear rain garden has been included as a part of all alternatives. This garden is anticipated to treat approximately 3,119 cubic feet of runoff, and will filter sediment and pollutants from the roadway. Temporary (during construction) and permanent stormwater management, erosion and sediment controls, upgraded stormwater conveyance and outfalls, and water quality catch basins will be used, wherever feasible, to screen debris and filter sediment before discharging runoff to the existing outfalls will also be implemented as part of the project.

The selection of an open bottomed culvert crossing for Soapstone Creek will improve water quality by reducing sediment that would have accumulated with the traditional concrete-bottomed box culvert. Closed bottomed culverts also can cause floodwaters to pick up velocity, resulting in

increased erosion and introduction of sediment on the downstream side of the culvert during a storm event. The natural stream bottom will be beneficial to aquatic organisms within the stream and floodplain by allowing for easier access upstream and downstream of the crossing. BMPs will be used and any work completed as part of this project will improve stormwater management and is anticipated to improve water quality downstream of the project area. Improved facilities will result in minor, long-term beneficial impacts to water quality. Work in this area is not expected to have an impact past the confluence with Rock Creek, a tributary to the Potomac River.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Reconfiguring the existing Y-intersection at Brandywine Street to a T-intersection would decrease the amount of impervious surface and increase the volume of stormwater able to be treated by incorporating two additional rain gardens on each side of the intersection. The addition of these rain gardens would enhance other stormwater treatment measures being proposed under the Candidate Build Alternatives by increasing the volume of stormwater runoff able to be treated to 5,434 cubic feet and filtering additional sediment and pollutants from the roadway. The addition of Option C to any of the Candidate Build Alternatives will result in improved stormwater treatment facilities with minor, long-term beneficial impacts to water quality.

WETLANDS

There are no wetlands within the project area; therefore, there would be no impact to wetlands from the No Action Alternative, Candidate Build Alternatives, or design options.

NAVIGABLE WATERS

ALTERNATIVE 1 - NO ACTION ALTERNATIVE

Under this alternative, inadequate stormwater management for this area would result in continued erosion of the roadbed and stream channels, sedimentation from overland erosion, chemical and nutrient loading from untreated stormwater, and loss of riparian vegetation. Therefore, the No Action Alternative would have negligible, long-term impacts to downstream water resources including Navigable Waters due to continued degraded water quality.

ALTERNATIVES 2, 3, 4, AND OPTIONS

There are no navigable waters in the project area, however the Candidate Build Alternatives would have negligible long-term, beneficial impacts to downstream water resources, including Navigable Waters. The project would support preservation of downstream waters and their resources by implementing stormwater management practices that will reduce pollutants, sediment, and velocity alleviating damage from water during rain events, which would improve downstream water quality. Due to the significant distance to the Potomac River (the nearest navigable water), none of these will result in any significant impacts to Navigable Waters.

WILD AND SCENIC RIVERS

ALTERNATIVES 1, 2, 3, 4, AND OPTIONS

There are currently no Wild or Scenic Rivers in the immediate or extant project area. Therefore, none of the described alternatives or options would have an impact to such resources.

COASTAL ZONE

ALTERNATIVES 1, 2, 3, 4, AND OPTIONS

The project area is located in the District of Columbia, which is not within a designated Coastal Zone. Therefore, none of the alternatives would have an impact on the management of Coastal Zone resources.

CHESAPEAKE BAY PROTECTION

ALTERNATIVE 1 - NO ACTION ALTERNATIVE

Under this alternative, inadequate stormwater management for this area would continue resulting in continued erosion of the roadbed and stream channels, sedimentation from overland erosion, chemical and nutrient loading from untreated stormwater, and loss of riparian vegetation. Therefore, the No Action Alternative would have minor, long-term impacts to downstream water resources, including the Chesapeake Bay, due to continued degraded water quality.

ALTERNATIVES 2, 3, 4 AND OPTIONS

By implementing stormwater management practices that will reduce pollutants and alleviate damage from water during rain events, each of the Candidate Build Alternatives would support the Chesapeake Bay and its resources by improving downstream water quality. Thus minor, beneficial impacts to the local water system from the Candidate Build Alternatives and options are anticipated.

MARINE AND ESTUARINE RESOURCES

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under this alternative, inadequate stormwater management for this area would continue resulting in continued erosion of the roadbed and stream channels, sedimentation from overland erosion, chemical and nutrient loading from untreated stormwater, and loss of riparian vegetation. Therefore, the No Action Alternative would have minor long-term impacts to downstream water resources, including the marine and estuarine resources, due to continued degraded water quality.

ALTERNATIVES 2, 3, 4 AND ALTERNATIVE 2 OPTIONS

No marine or estuarine resources are located in the immediate vicinity of this project; however, the Candidate Build Alternatives would either not impact or will support preservation of downstream resources by implementing stormwater management practices that will reduce pollutants and alleviate damage from water during rain events.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Due to the significant distance to marine and estuarine resources, this option would not result in any significant impacts to marine and estuarine resources.

4.1.3 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

As discussed in Chapter 3, a search of databases and communication with park officials indicate no federal or state-listed threatened or endangered species are known to occur in the project

vicinity (Yeaman, 2013). The U.S. Fish and Wildlife Service (USFWS) was consulted and has confirmed that no other proposed or federally listed endangered or threatened species are known to exist within the project area (LaRouche, 2013). Therefore, it is not expected that this project will have any impact on protected species and no further coordination under Section 7 of the Endangered Species Act is required.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Although no threatened or endangered species are known to exist in the project vicinity, other terrestrial and aquatic wildlife would be affected by the No Action Alternative. Under this alternative, inadequate stormwater management for this area would continue the erosion of the roadbed and stream channels, sedimentation from overland erosion, chemical and nutrient loading from untreated stormwater, and loss of riparian vegetation.

Degradation of the riparian habitats through erosion and sedimentation could result in potential displacement of terrestrial populations. Habitats located downstream of the project would continue to receive contaminated stormwater; degrading the quality of that habitat. Therefore, the No Action Alternative would have minor, long-term impacts to local riparian habitat and downstream water resources, including aquatic habitat, due to continued degraded water quality.

ALTERNATIVES 2, 3, 4 AND ALTERNATIVE 2 OPTIONS

A search of databases and communication with park officials indicate no federal or state-listed threatened or endangered species are known to occur in the project vicinity.

Minor, short-term impacts to terrestrial and aquatic organisms and their habitat would occur during construction; while minor, long-term, beneficial impacts would occur upon completion of the project. Species likely to be found in the area are adapted to urban habitats and the more protected wooded park habitats. Construction associated with the Candidate Build Alternatives will be primarily in previously disturbed areas and edges of fragmented urban forest, which provide marginal habitat for terrestrial animals. Reconstruction activities and operation of machinery would be disruptive to wildlife, which would likely retreat to deeper parts of the forest, and repopulate the site when construction is complete. Disturbed areas will be replanted with a native seed mix and trees in consultation with NPS.

Although there are no aquatic species of concern near the project area, habitats downstream would benefit from increased stormwater management. Erosion and sediment control plans, stormwater management plans, and BMPs will be used during construction to protect water quality and habitat integrity. The Candidate Build Alternatives would support preservation of downstream resources, including aquatic habitat, by implementing stormwater management practices that will reduce pollutants and alleviate damage from water during rain events including erosion. These actions would improve the water quality and allow for riparian habitat to reestablish.

The new culvert over Soapstone Creek would accommodate larger stormwater events compared to the existing culvert, resulting in a moderate, long-term, beneficial, local impacts on downstream aquatic habitat. In addition, the culvert would provide a continuous natural stream

bottom that would further reduce velocities and erosion potential; and benefit both aquatic and terrestrial organisms by allowing for better wildlife passage under Broad Branch Road.

The Candidate Build Alternatives include the construction of retaining walls to decrease the amount of land disturbance necessary, and for road side stabilization (see **Table 4-4**). These walls can impede wildlife passage. Small and medium animals such as mice, squirrels, foxes, opossums, and raccoons are able to surmount 3-foot walls, or would be likely to go around a length of 50 feet. Larger animals such as deer can jump over walls from 5 to 8 feet high, and would likely walk around obstructions of 100 feet in length. These criteria were used in discussions with park natural resources specialists to assess impacts from the types of impediments animals would encounter while moving in and out of the park.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Reconfiguring the existing Y-intersection at Brandywine Street to a T-intersection would not increase the area of disturbance as construction would occur within the footprint of the existing intersection. The two additional rain gardens would increase the volume of stormwater able to be treated, decreasing pollutants and damage from water during rain events, resulting in a moderate, long-term, beneficial impacts on downstream aquatic and riparian habitat. The rain gardens would also provide additional wildlife habitat. Option C would have a minor, long-term, beneficial impacts to wildlife habitat.

Table 4-4. Retaining Walls (in linear feet) – Potential Impediments to Wildlife Movements

RETAINING WALLS	ALT 1 NO ACTION	ALT 2	OPTION A	OPTION B	ALT 3	ALT 4	OPTION C
Length of retaining walls over 3 feet high along the alignment	*20 existing walls of varying height for a total of approximately 1,405 feet*	4,096	561	411	5,282	6,140	0
Number of retaining walls over 3 feet high and longer than 50 feet		15	1	1	22	26	0
Length of retaining walls over 5 feet high along the alignment		2,445	561	411	4,960	6,078	0
Number of retaining walls over 5 feet high and longer than 100 feet		4	1	1	15	18	0

WILDLIFE AND WATERFOWL REFUGES

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

No wildlife or waterfowl refuges are located in the vicinity of this project; however, the Candidate Build Alternatives would support preservation of downstream resources by implementing stormwater management practices that will reduce pollutants and alleviate damage from water during rain events, which would improve downstream water quality. As such, the addition of stormwater management systems as part of the project may result in potential beneficial impacts to wildlife and waterfowl refuges linked to but outside the project area.

ANADROMOUS FISH, TROUT WATERS, AND SHELLFISH

Habitats supporting anadromous fish are located directly downstream of the project area. The NPS has future plans to remove the existing impediments to their passage at the culvert beneath

Beach Drive. None of the waters in the project area or immediately downstream support populations of trout or shellfish (Yeaman, 2011).

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

The area would continue to receive contaminated stormwater degrading the quality of downstream habitat supporting anadromous fish. Therefore, the No Action Alternative would have minor, long-term impacts to local aquatic habitat and downstream water resources, including aquatic habitat, due to continued degraded water quality.

ALTERNATIVES 2, 3, 4 AND OPTIONS

Potential long-term, minor beneficial impacts may occur from implementation of any of the Candidate Build Alternatives which would support preservation of downstream resources by implementing stormwater management practices that will reduce pollutants and alleviate damage from water during rain events. Improved stormwater management would allow riparian and in-stream habitats downstream to reestablish, which would improve fish habitat. Erosion and sediment control plans, stormwater management plans, and BMPs will be used during construction to protect water quality and habitat integrity.

4.1.4 VEGETATION

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Although no reconstruction would take place, this alternative would have minor, local, long-term impacts to vegetation due to continued erosion. Excess stormwater from the upland areas surrounding Broad Branch Road currently flows unchecked into Rock Creek Park causing erosion, damaging vegetation, and making it difficult for new vegetation to take hold.

ALTERNATIVES 2, 3, AND 4

This project would expand the width of the existing Broad Branch Road footprint, decrease vegetated areas, and result in a minor, long-term impact to vegetation. The footprint will be expanded in areas directly adjacent the existing pavement. Work conducted subsurface may damage trees located beyond the limits of disturbance if their root systems stretch into areas where ground breaking occurs.

All vegetation occurring within the limits of disturbance is considered to be impacted. Trees surveyed for which 30 percent or more of the critical root zone is located within the limits-of-disturbance are also considered to be impacted. **Table 4-5** shows how many trees, four inches or larger in diameter at breast height (DBH), for each Candidate Build Alternative and Option would be disturbed by construction.

Table 4-5. Trees Impacted (4 Inches in DBH or greater)

RESOURCE	ALT 1 NO ACTION	ALT 2	OPTION A[1]	OPTION B	ALT 3	ALT 4	OPTION C[2]
Number of trees impacted	0	285	-45	6	462	460	3

[1] Increased retaining walls would reduce the number of trees impacted under Alternative 2.

[2] Retaining the existing Y configuration at the intersection with Brandywine reduces the number of trees impacted under all Alternatives.

Disturbance to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers (DDOT 2009e).

In order to prevent the introduction of new invasive species and to prevent the spread of existing populations, BMPs should be followed, including washing machinery before it enters the area, minimizing ground disturbance, and reseeding of disturbed areas. Rock Creek Park staff will be recommending a preferred seed mix for use in disturbed areas after construction and has requested a maintenance plan for keeping new or restored retaining walls free of invasive plants.

Alternative 2 - Option A Retaining Wall would include an additional retaining wall to limit the extent of cut, resulting in a decrease of disturbed area and a decrease in the number of trees greater than 4 inches DBH (approximately 45 less) impacted by construction. The addition of Option A to Candidate Build Alternative 2 would have a minor, long term beneficial impact to vegetation.

Alternative 2 - Option B Sidewalk would increase the limits-of-disturbance for Candidate Build Alternative 2 resulting in 6 additional trees greater than 4 inches DBH being impacted. Three of these trees occur in DDOT right-of-way and three occur in NPS Rock Creek Park property where the proposed sidewalk extends beyond DDOT right-of-way. The addition of Option B to Candidate Build Alternative 2 would have a minor, short term impact to vegetation.

Option C – T-Intersection at Brandywine Street. Reconfiguring the existing Y-intersection at Brandywine Street to a T-intersection would not increase the area of disturbance as construction would occur within the footprint of the existing intersection; however, three additional trees greater than 4 inches DBH, small shrubs, and the maintained grass lawn would be impacted with removal of the traffic island. The two added rain gardens on both sides of the new intersection would be planted with native species appropriate for the rain garden, resulting in a net increase to vegetated areas along Broad Branch Road. Option C would have a minor, long-term, beneficial impacts to vegetation.

4.2 CULTURAL AND PALEONTOLOGICAL RESOURCES

In this EA, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with CEQ regulations that implement NEPA. These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation (ACHP) regulations implementing Section 106 (36 CFR Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by (1) determining the Area of Potential Effects (APE); (2) identifying cultural resources present in the APE that are either listed in or eligible to be listed in the National Register of Historic Places (NRHP); (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the NRHP; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the ACHP's regulations, a determination of either adverse effect or no adverse effect must be made for affected NRHP listed or eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the NRHP (e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the build alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, Assessment of Adverse Effects). Adverse effects on historic properties would include, but not be limited to:

1. Physical destruction, damage, or alteration of all or part of the property;
2. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;
3. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
4. Neglect of a property resulting in its deterioration or destruction; and
5. Transfer, lease, or sale of the property (36 CFR 800.9[b]).

A determination of no adverse effect means that historic properties are present, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the NRHP.

For the purposes of this EA, a significant impact under NEPA is defined as an "unresolvable" adverse effect under Section 106 of the NHPA. "Unresolvable" adverse effects may occur when the terms of mitigation cannot be agreed upon, or if the NHPA Section 106 process is foreclosed due to an inability to reach agreement.

A separate Cultural Resources Assessment has been prepared for the proposed rehabilitation of Broad Branch Road and this EA summarizes the findings. The Cultural Resources Assessment is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking (implementation of the alternatives) on cultural resources, based upon the criteria of adverse effect found in the ACHP's regulations.

4.2.1 Archeological Resources

Project effects to archaeological sites include physical disturbance through road reconstruction (i.e. cut and fill activities), trenching for utility lines, excavation of retaining wall piers and Soapstone Creek Culvert subsurface, surface modification for rain gardens, use of staging areas for heavy equipment and supplies, and vandalism of archaeological materials from temporary or permanent increased access to sites. Any ground-disturbing action in the area of an NRHP-eligible or potentially eligible archaeological site, or modification to such a site, can affect the physical integrity of that cultural resource, resulting in alteration or destruction of those characteristics or qualities which make it potentially eligible for inclusion in the NRHP.

ALTERNATIVE 1- NO ACTION ALTERNATIVE

Continued erosion and natural degradation of areas within Rock Creek Park which contain archeological resources will continue to occur as a result of uncontrolled stormwater runoff. Archeological resources would continue to be managed in accordance with Sections 106 and 110 of the NHPA and NPS's Conservation Planning, Environmental Impact Analysis and Decision Making (Director's Order #12). Implementation of the No Action Alternative (repaving and general maintenance) would result in no adverse impacts to archeological resources.

ALTERNATIVE 2 WITH OPTIONS A AND B

No archaeological sites occur within the DDOT right-of-way. The area along Broad Branch Road between Linnean Avenue and 27th Street has been previously disturbed; the uplands near Linnean Avenue have been either deeply graded or filled, and other uplands near Broad Branch Road are too steep for direct occupation. This area contains no potential for archaeological resources (Wagner 2011). The area along Broad Branch Road from 27th Street to Beach Drive is characterized by steep uplands on the west side and Broad Branch on the east side. The original topography was modified in 1839 when Broad Branch Road was constructed and no archaeological sites prior to 1839 would have been located on the hill slopes. The original Brandywine Street/Broad Branch Road intersection was constructed as a Y-intersection and the entire area has been previously disturbed by topographic recontouring and road construction. The original topography along Brandywine Street was modified during construction of the street prior to 1945 (USGS 1945) and no archaeological sites prior to 1945 would have been located on the hill slopes. The area north of the confluence of Soapstone Creek and Broad Branch contains a small residence with a sloping yard bounded by stone retaining walls (the Gatehouse at La Villa Firenze). Road, park, and building construction activities at the confluence of Soapstone Creek and Broad Branch have altered the topography at this location, particularly the construction of a structure by 1898, its demolition prior to 1925, and construction of the existing gatehouse, this area contains no potential for prehistoric or historic resources.

Option A - Retaining Wall. The original topography in the area designated for the 561 foot retaining wall in Option A was modified in 1839 when Broad Branch Road was constructed and no archaeological sites prior to 1839 would have been located on the hill slopes. No archaeological sites will be impacted by implementation of Option A for Alternative 2.

Option B - Sidewalk. No archaeological sites occur within DDOT right-of-way or within NPS land at this location. The original topography in the area designated for the connecting sidewalk, from the NPS parking lot at Beach Drive and Broad Branch Road to the Soapstone Valley trail, in Option B was modified in 1839 when Broad Branch Road was constructed and no archaeological sites prior to 1839 would have been located on the hill slopes. No archaeological sites will be impacted by implementation of Option B for Alternative 2.

ALTERNATIVES 3 AND 4

No archaeological sites occur within the existing DDOT right-of-way or the proposed additional rights-of-way to be obtained from the NPS, private landowners, and sovereign nations. The area along Broad Branch Road between Linnean Avenue and 27th Street has been previously disturbed;

the uplands near Linnean Avenue have been either deeply graded or filled, and other uplands near Broad Branch Road are too steep for direct occupation. This area contains no potential for archaeological resources (Wagner 2011). The area along Broad Branch Road from 27th Street to Beach Drive is characterized by steep uplands on the west side and Broad Branch on the east side. The original topography was modified in 1839 when Broad Branch Road was constructed and no archaeological sites prior to 1839 would have been located on the hill slopes. The original Brandywine Street/Broad Branch Road intersection was constructed as a Y-intersection and the entire area has been previously disturbed by topographic recontouring and road construction. The original topography along Brandywine Street was modified during construction of the street prior to 1945 (USGS 1945) and no archaeological sites prior to 1945 would have been located on the hill slopes. The area north of the confluence of Soapstone Creek and Broad Branch contains a small residence with a sloping yard bounded by stone retaining walls (the Gatehouse at La Villa Firenze). Road, park, and building construction activities at the confluence of Soapstone Creek and Broad Branch have altered the topography at this location, particularly the construction of a structure by 1898, its demolition prior to 1925, and construction of the existing gatehouse, this area contains no potential for prehistoric or historic resources.

Option C - T-Intersection at Brandywine Street. No archaeological sites occur within DDOT right-of-way at the Brandywine Street intersection. The original topography in the area designated for the reconfigured T-intersection at Brandywine Street and Broad Branch Road was modified in 1839 when Broad Branch Road was constructed and no archaeological sites prior to 1839 would have been located on the hill slopes. No archaeological sites will be affected by implementation of Option C for Alternatives 2, 3 and 4.

4.2.2 Historic Structures

Project effects to architectural resources include demolition, alteration of architectural traits, structural instability through vibration, short-term audio intrusions during construction, and visual intrusions to historic settings. Any visual or audio intrusions to the setting or demolition or alteration of architectural traits, can affect the physical integrity of an NRHP-eligible or potentially eligible architectural resource, resulting in alteration or destruction of those characteristics or qualities that make it potentially eligible for inclusion in the NRHP.

Alternative 1- No Action Alternative

Deterioration of historic structures such as the culverts, and retaining walls, along Broad Branch Road will continue to occur as a result of uncontrolled stormwater runoff. Historic resources in Rock Creek Park would continue to be managed in accordance with Sections 106 and 110 of the NHPA and the NPS's Conservation Planning, Environmental Impact Analysis and Decision Making (Director's Order #12).

Alternative 2 with Options A and B

Soapstone Creek Culvert, stormwater outfalls, segments of retaining walls, and boundary markers that are considered contributing elements to the Rock Creek Park Historic District (RCPHD) and the stone retaining walls associated with the gatehouse at La Villa Firenze will be impacted by implementation of Alternative 2. The historic setting of the RCPHD along Broad

Branch will be affected by visual intrusions related to reconstruction of roadway and drainage elements.

The Soapstone Creek Culvert will be demolished and replaced with a concrete arch culvert. Demolition of the Soapstone Creek Culvert will have an impact on this NRHP-eligible resource.

Even though most of the historic stone retaining wall segments are located beyond the cut and fill lines for the roadway and will not be directly affected by surface and subsurface grading activities, portions of historic retaining wall segments H9, H10, H11, H14, and H15 are located within the DDOT right-of-way. Use of heavy grading equipment may cause ground vibration which could potentially damage or topple adjacent historic retaining wall segments during construction.

New retaining walls have been proposed near historic stone retaining wall segments H2, H3, H4, H5, H6, H11, H12, H13, H14, and H15. These historic retaining wall segments will be restored and stabilized or removed and replaced with architecturally compatible designs and materials.

Twelve of the twenty-one outfall locations are associated with either stone headwalls or the historic stone retaining wall segments. Portions of existing stone retaining wall segments H3, H6, H7, H8, H14 and H15 (OF-6, OF-8, OF-12, OF-13, OF-18 and OF-19) and six existing stormwater outfall stone headwalls (OF-9, OF-10, OF-14, OF-15, OF-20 and OF-21) will be removed and replaced during excavation and replacement of the outfall pipes.

Three Rock Creek Park stone and metal boundary markers may be disturbed through roadway cut and fill activities. These markers may be inadvertently moved during roadbed preparation near the DDOT right-of-way or covered with fill.

The original stone retaining walls at the entrance to the driveway to the Gatehouse at La Villa Firenze will be demolished with the expansion of the right-of-way and the construction of new retaining walls on the west side of Broad Branch Road.

The original Brandywine Street/Broad Branch Road intersection was constructed as a Y-intersection and the entire area has been previously disturbed by topographic recontouring and road construction. The original topography along Brandywine Street was modified during construction of the street prior to 1945 (USGS 1945) and no architectural resources prior to 1945 would have been located on the hill slopes.

Visual intrusions to the historic setting of RCPHD would be minimized with the use of architecturally compatible designs and materials for the replacement of Soapstone Creek Culvert, new retaining walls, new outfall headwalls, and repair of historic stone retaining walls during outfall replacement.

Option A - Retaining Wall. No architectural resources occur within the DDOT right-of-way at this location. The original topography in the area designated for the 561 foot retaining wall in Option A was modified in 1839 when Broad Branch Road was constructed and no architectural resources prior to 1839 would have been located on the hill slopes. No architectural resources will be affected by implementation of Option A for Alternative 2.

Option B - Sidewalk. No architectural resources occur within DDOT right-of-way at this location. The original topography in the area designated for the connecting sidewalk, from the NPS parking lot at Beach Drive and Broad Branch Road to the Soapstone Valley trail, in Option B was modified in 1839 when Broad Branch Road was constructed and no architectural resources prior to 1839 would have been located on the hill slopes. No architectural resources will be affected by implementation of Option B for Alternative 2.

ALTERNATIVES 3 AND 4

Soapstone Creek Culvert, stormwater outfalls, segments of retaining walls, and boundary markers that are considered contributing elements to the RCPHD and the stone retaining walls associated with the gatehouse at La Villa Firenze will be impacted by implementation of Alternatives 3 and 4. The historic setting of the RCPHD along Broad Branch will be impacted by visual intrusions related to reconstruction of roadway and drainage elements.

The Soapstone Creek Culvert, located at the confluence of Soapstone Creek and Broad Branch Run, is a six-foot wide, stone arch culvert constructed in 1898 during a period of initial improvements to adjacent Rock Creek Park. The downstream wing walls were most likely added in 1934 when the culvert was extended. The Soapstone Creek Culvert is considered eligible for the NRHP under Criterion A for its association with the early development of Rock Creek Park and Criterion C as a representative example of rustic architecture. The Soapstone Creek Culvert will be demolished and replaced with concrete arch culvert. Demolition of the Soapstone Creek Culvert will have an impact on this NRHP-eligible resource.

Even though most of the historic stone retaining wall segments are located beyond the cut and fill lines for the roadway and will not be directly affected by surface and subsurface grading activities, portions of historic retaining wall segments H9, H10, H11, H14, and H15 are located within the DDOT right-of-way. Use of heavy grading equipment will cause ground vibration which will damage or topple adjacent historic retaining walls.

New retaining walls have been proposed near historic stone retaining wall segments H2, H3,H H4, H5, H6, H11, H12, H13, H14, and H15. These historic retaining wall segments will be removed and replaced with architecturally compatible designs and materials.

Twelve of the twenty-one outfall locations are associated with either stone headwalls or historic stone retaining wall segments. Portions of existing stone retaining wall segments H3, H6, H7, H8, H14 and H15 (OF-6, OF-8, OF-12, OF-13, OF-18 and OF-19) and six existing stormwater outfall stone headwalls (OF-9, OF-10, OF-14, OF-15, OF-20 and OF-21) will be removed and replaced during excavation and replacement of the outfall pipes.

Three Rock Creek Park stone and metal boundary markers may be disturbed through roadway cut and fill activities. These markers may be inadvertently moved during roadbed preparation near the DDOT right-of-way or covered with fill.

The original stone retaining walls at the entrance to the driveway to the Gatehouse at La Villa Firenze will be demolished with the expansion of the right-of-way and the construction of new retaining walls on the west side of Broad Branch Road.

The original Brandywine Street/Broad Branch Road intersection was constructed as a Y-intersection and the entire area has been previously disturbed by topographic recontouring and road construction. The original topography along Brandywine Street was modified during construction of the street prior to 1945 (USGS 1945) and no architectural resources prior to 1945 would have been located on the hill slopes.

Visual intrusions to the historic setting of RCPHD would be minimized with the use of architecturally compatible designs and materials for the replacement of Soapstone Creek Culvert, new retaining walls, new outfall headwalls, and repair of historic stone retaining walls during outfall replacement.

Option C- T-intersection at Brandywine Street. No architectural resources occur within DDOT right-of-way the Brandywine Street intersection. The original topography in the area designated for the reconfigured T-intersection at Brandywine Street and Broad Branch Road in Option C was modified in 1839 when Broad Branch Road was constructed and no architectural resources prior to 1839 would have been located on the hill slopes. No architectural resources will be affected by implementation of Option C for Alternatives 2, 3 and 4.

4.2.3 Cultural Landscapes

Project effects to cultural landscapes include alteration of character defining features, short-term audio intrusions during construction, and visual intrusions to established viewsheds. Any visual or audio intrusions to the cultural landscape or alteration of character defining features, can affect the physical integrity of an NRHP-eligible or potentially eligible cultural landscape, resulting in alteration or destruction of those characteristics or qualities that make it potentially eligible for inclusion in the NRHP.

Alternative 1- No Action Alternative

Deterioration of historic structures such as the bridges, culverts, and retaining walls, along Broad Branch Road will continue to occur as a result of uncontrolled stormwater runoff. This deterioration of rustic architectural features diminishes the overall feeling of the Rock Creek Park cultural landscape. Historic resources in Rock Creek Park would continue to be managed in accordance with Sections 106 and 110 of the NHPA and the NPS's Conservation Planning, Environmental Impact Analysis and Decision Making (Director's Order #12).

Alternatives 2, 3 and 4 and Options

Segments of two historic trails which are considered contributing elements of the Historic Trails Cultural Landscape (Poss and McMillen 2012), are present along the southern end of the project area near the intersection of Broad Branch Road and Beach Drive (Figure 2-22): the Soapstone Valley foot trail and the bridle trail from the intersection of Broad Branch and Beach Drive to White Horse Trail. Visual intrusions to the viewshed of this cultural landscape of RCPHD would be minimized with the use of architecturally compatible designs and materials for the replacement of Soapstone Creek Culvert, new retaining walls, new outfall headwalls, and repair of historic stone retaining walls during outfall replacement.

Temporary visual and audible intrusions to the two trails associated with the Rock Creek Park cultural landscape will likely occur during the period of construction for any of the alternatives for reconstruction of Broad Branch Road. Visual intrusions may include the presence of large machinery, excavated roadway and earth, spoil and fill piles, stockpiling of new construction material, and road blocks and detours. Temporary audible intrusions may include increased noise from construction activity such as excavation; large vehicle movement, braking, and back-up signals; and construction crews. Long-term visual intrusions from the roadway improvements are not expected to occur because the roadway will be rehabilitated in its existing corridor. Long-term audible intrusions are not anticipated because reconstruction of Broad Branch Road is not a capacity-building project; no increased noise from additional vehicular traffic is expected to occur.

4.2.4 Ethnographic Resources

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

Ethnographic resources are not known to exist in the proposed project area. No impacts to ethnographic resources are anticipated as a result of implementing the No Action or Candidate Build Alternatives.

4.2.5 Museum Collections

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

Although artifacts from previous archeological surveys conducted in Rock Creek Park have been collected, none are housed in the Broad Branch Road project area. No impacts to museum collections are anticipated as a result of implementing the No Action or Candidate Build Alternatives.

4.2.6 Indian Trust Resources and Native American Sacred Sites

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

No Indian Trust Resources are known to exist within the proposed project area and the lands are not held in trust by the Secretary of Interior for the benefit of American Indians or Alaska Native Tribes. No sites sacred to Native Americans are known to exist in the project area. No impacts to Indian Trust Resources and Native American sacred sites are anticipated from the No Action or Candidate Build Alternatives.

4.2.7 Paleontological Resources

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

No surface outcrops of the fossiliferous Potomac Formation occur in the project area. Because no known resources exist within the project area, no impact to paleontological resources are anticipated from the No Action or the Candidate Build Alternatives.

4.2.8 Cultural and Paleontological Resources Summary

The No Action Alternative would result in no impacts to archaeological resources. Alternatives 2, 3, and 4 and Options A, B, and C would result in no impacts to archaeological resources.

Implementation of the No Action Alternative would result in no impacts to historic structures. Alternatives 2, 3, and 4 would result in permanent long-term impacts to contributing elements to the RCPHD: the demolition of Soapstone Creek Culvert, segments of retaining walls, and stormwater outfall headwalls, and demolition of the original stone retaining walls at the Gatehouse driveway entrance to La Villa Firenze. In addition, Alternatives 2, 3, and 4 would result in short-term visual and audible impacts to historic structures during construction. Options A, B, and C would result in no impacts to historic structures.

Implementation of the No Action would result in no impacts to cultural landscapes. Alternatives 2, 3, and 4 would result in no long-term impacts to cultural landscapes with the use of architecturally compatible designs and materials for the replacement of Soapstone Creek Culvert, new retaining walls, new outfall headwalls, and repair of historic stone retaining walls during outfall replacement. In addition, Alternatives 2, 3, and 4 would result in short-term visual and audible impacts to cultural landscapes during construction. Options A, B, and C would result in no impacts to cultural landscapes.

Implementation of the No Action and all three Alternatives as well as all options would result in no impact to ethnographic resources, museum collections, Indian Trust Resources and Native American sacred sites, and paleontological resources.

4.3 SOCIOECONOMIC RESOURCES

4.3.1 RIGHT-OF-WAY

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, Broad Branch Road would not be reconstructed, but only repaved within the existing roadway alignment, which occurs almost entirely in DDOT right-of-way, with a few minor exceptions. Encroachments outside the DDOT right-of-way occur on both the east and west sides of the roadway. This EA will serve to provide the appropriate action needed to correct these right-of-way inconsistencies, which may include an easement, land transfer, or permit.

ALTERNATIVE 2

Improvements would be limited to the reconstruction of Broad Branch Road following the existing paved footprint, however cut and fill activities will occur to either side of the existing right-of-way for a total of 249 square feet, but no additional right-of-way will be required, as depicted in **Table 4-6**.

Table 4-6. Additional Right-of-Way Requirements (square feet)

RESOURCE	ALT 1 NO ACTION	ALT 2	OPT ION A	OPTION B	ALT 3	ALT 4	OPTION C
Area Outside Existing Right-of-Way	0	0	0	3,737	28,827	41,823	0

Option A - Retaining Wall. The longer retaining wall proposed for Option A reduces the amount of cut required for roadway slopes, but not in areas where cut would occur outside the existing right-of-way. Option A requires no additional grading areas outside the existing right-of-way and no acquisition of right-of-way.

Option B - Sidewalk. Under Option B for Candidate Build Alternative 2, a sidewalk would be added to the southern end of the corridor connecting the Soapstone Creek Trail with the parking lot near Beach Drive. With the construction of the sidewalk, improvements beyond the DDOT right-of-way would be required for an additional area of 3,737 square feet in the Hillwood Garden and Estates property and approximately 1,700 square feet in NPS-owned Rock Creek Park property. The portion of the sidewalk in NPS Rock Creek Park property would be constructed through a temporary easement and no right-of-way would be required.

ALTERNATIVES 3 AND 4

Under Candidate Build Alternatives 3 and 4 additional areas outside the existing right-of-way would be required to expand the roadway for the inclusion of a bike lane and sidewalk. Additional parcels or parts of parcels will not require relocation of a residence, business, or other structures. The acquisition of right-of-way would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Limited right-of-way, approximately 39 square feet, may be required along the east side of the roadway on NPS land to accommodate the construction of proposed new retaining walls; however, the final locations of new retaining walls and need for additional right-of-way will be determined after completion of engineering studies to assess the condition of existing walls prior to a determination regarding the need for new walls.

Option C – T-Intersection at Brandywine Street. The traffic island at the existing Y-intersection with Brandywine Street occurs within DDOT right-of-way and is maintained by the District Department of Parks and Recreation (DPR). No additional right-of-way would be required to eliminate the traffic island as part of the reconfiguration the intersection at Brandywine Street under Option C.

4.3.2 LAND USE

According to DC Policy UD-1.2.1: *Respecting Natural Features in Development*, it is an important goal of the District to maintain and protect Washington's unique landscape and natural features. The District's comprehensive plan states that natural features should be preserved in low-density, wooded, or hilly areas and new construction should accommodate these resources rather than altering them. Designs for this project should take into consideration the bucolic setting of the project area and strive to maintain the existing neighborhood setting (DC Government 2007a, 2007b, 2007c).

The methodology used to determine the environmental consequences to land use was derived from the potential for changes to land use as a result of the implementation of any of the Alternatives.

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

Land use within the project area is not anticipated to change from either the maintenance or improvement of this road. The land is zoned as single family residential and is currently at capacity. Zoning will not be changed in this area and is not expected to change in the near future.

SOVEREIGN NATIONS

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, Broad Branch Road would not be reconstructed, but only repaved within the DDOT right-of-way, and existing conditions would remain unchanged. There would be no impact to land belonging to Sovereign Nations.

ALTERNATIVES 2, 3 AND 4

Under Candidate Build Alternative 2, grading for construction would require a temporary easement on lands belonging to a Sovereign Nation (Malaysia) resulting in negligible, short-term impacts to foreign property. No permanent structures would be constructed outside existing DDOT right-of-way. Under Candidate Build Alternatives 3, and 4, additional right-of-way would need to be acquired within lands belonging to Sovereign Nations (Italy and Malaysia) for permanent construction of retaining walls, resulting in a minor, long-term impacts to foreign property (see **Table 4-7**). Negotiation with these nations is being coordinated by the US Department of State per request from DDOT. The area needed would not alter the ability of the embassy residences to function as intended.

Table 4-7. Areas of Disturbance - Foreign Embassy Residences (Square Feet)

ALTERNATIVE	MALAYSIAN EMBASSY RESIDENCE	ITALIAN EMBASSY RESIDENCE
1	0	0
2	60 (grading only)	0
Option A	0	0
Option B	0	0
3	3,458	13,821
4	4,321	17,272
Option C	0	0

OPTIONS A AND B FOR ALTERNATIVE 2 AND OPTION C

These options are not located in the vicinity of land belonging to Sovereign Nations; therefore there would be no increase in impacts to foreign soil by implementing any of the Options.

4.3.3 ZONING

ALTERNATIVES 1, 2, 3, 4, ALTERNATIVE 2 OPTIONS, AND OPTION C

The No Action Alternative, Candidate Build Alternatives, and project options would not change zoning within or surrounding the project area; therefore there would be no impact to zoning.

4.3.4 DEMOGRAPHICS

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, Broad Branch Road would not be reconstructed and existing conditions would remain unchanged. There would be no impact to demographics under the No Action Alternative.

ALTERNATIVES 2, 3, 4, ALTERNATIVE 2 OPTIONS, AND OPTION C

Each of the Candidate Build Alternatives requires grading and/or additional right-of-way, with Alternative 4 requiring the most. The area needed would be adjacent to the existing paved surface, and would not result in any residential relocations, nor would it directly affect populations in the project area. The Candidate Build Alternatives would have no impact on population distribution within the project area.

4.3.5 ENVIRONMENTAL JUSTICE

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, Broad Branch Road would not be reconstructed, only repaved and maintenance activities would occur as with existing conditions. No impacts to low-income or minority populations would occur under the No Action Alternative.

ALTERNATIVES 2, 3, 4, AND OPTIONS

Based on the low levels of minority and low income populations in the area surrounding the proposed project, there are not anticipated to be any disproportionately high or adverse impacts on these populations. To ensure minority populations were afforded the opportunity to participate during the public scoping and alternatives development period, advertisements were placed in several area newspapers, including The Current Newspaper and El Tiempo Latino Spanish newspaper, and postings were made to the surrounding communities' and Advisory Neighborhood Commission (ANC) listserves, as well as the project website. A contact was provided with each advertisement for individuals to request special assistance or translation services during the meetings, and English and Spanish versions of meeting handouts were available at each public meeting or upon request (please see Chapter 5).

4.3.6 ECONOMICS AND DEVELOPMENT

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, Broad Branch Road would not be reconstructed, only repaved and would have no impact on local economics or development.

ALTERNATIVES 2, 3, 4, ALTERNATIVE 2 OPTIONS, AND OPTION C

The Candidate Build Alternatives would not change employment or development in the project area. Minimal employment opportunities and some related revenues would result from construction of the proposed project. While construction activities have the potential to be beneficial, the relatively small scope of the project makes economic impacts negligible and short-term in nature.

4.3.7 JOINT DEVELOPMENT

ALTERNATIVES 1, 2, 3, 4, ALTERNATIVE 2 OPTIONS, AND OPTION C

None of the alternatives would have any impact on joint development, since there are no proposed or existing joint developments within or surrounding the project area.

4.3.8 AESTHETICS AND VISUAL QUALITY

Effects to aesthetics and visual quality in the project area include alteration of existing cultural and natural features and introduction of vertical elements that could obscure existing views.

Temporary visual intrusions will likely occur during the period of construction for all of the Candidate Build Alternatives. Visual intrusions may include the presence of large machinery, excavated roadway and earth, spoil and fill piles, stockpiling of new construction material, and road blocks and detours. Potential long-term visual intrusions are expected to occur and are discussed by alternative.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Alternative 1 will not result in any changes to the existing visual quality associated with the deteriorated condition of the project area. Uncontrolled stormwater has damaged existing culverts and retaining walls, undercut portions of Broad Branch Road, created instability of guard rails, and resulted in extensive erosion along Broad Branch and sedimentation in the vicinity of Soapstone Creek Culvert.

ALTERNATIVE 2 WITH OPTIONS A AND B

BROAD BRANCH ROAD SECTOR. Proposed retaining walls located on the west side of Broad Branch Road between Linnean Avenue and 27th Street and the west side of Broad Branch Road between 27th Street and Beach Drive are associated with steep hill slopes. The visual quality will change from natural or landscaped vegetation on the hill slopes to discontinuous retaining walls varying in height from 3 feet to 7 feet and ranging in length from 56 feet to 392 feet.

Proposed retaining walls located on the east side of Broad Branch Road between 27th Street and Beach Drive are associated with Broad Branch and Rock Creek Park. The visual quality will change from natural trees and vegetation along the stream banks to discontinuous retaining walls with a visible height of 3.5 feet and ranging in length from 15 feet to 815 feet. With all of the retaining walls on the east side measuring 3.5 feet in visible height, views into Rock Creek Park and Fort Circle Park from the roadway will be visible over the retaining walls for vehicle occupants, cyclists, and pedestrians.

Use of architecturally compatible designs and materials for construction of the new retaining walls would maintain the aesthetic quality associated with the rural feel of the roadway along the edge of Rock Creek Park and match with the rural architectural elements, such as Grant Road Bridge, that are characteristic of the Park.

Option A- Retaining Wall. Option A is associated with only the Broad Branch Road Sector. The expanded 561-foot long retaining wall would replace a 72-foot long wall that is 4 feet high, located on the west side of Broad Branch Road. The visual quality will change from natural or landscaped vegetation on the hill slope to a continuous retaining wall varying in height from 4.5 feet to 12 feet.

ROCK CREEK PARK SECTOR. Proposed retaining walls on the east side of Broad Branch Road (foreground) will most likely be viewed in their entirety from the top of the wall to the stream bottom within the Rock Creek Park sector. From Ridge Road/Walking Trail, the retaining walls are 8.75 feet and 10.5 feet high; and from Grant Road, the retaining wall is 14.75 feet high. Only

portions of the retaining walls on the west side of Broad Branch Road (background) will be visible above the foreground retaining walls from the Ridge Road/Walking Trail vantage point. Other visual changes include replacement of Soapstone Creek Culvert with a concrete arch culvert and the headwalls of three outfalls.

Use of architecturally compatible designs and materials for construction of the new Soapstone Creek Culvert, retaining walls, and outfall headwalls would maintain the aesthetic quality associated with the rural feel of the trail and roadway and match the rural architectural elements such as the existing Soapstone Creek Culvert that are characteristics of the Park.

Option B- Sidewalk. Option B is associated with only the Rock Creek Park Sector. Option B consists of installation of a connecting sidewalk from the NPS parking lot at Beach Drive and Broad Branch Road to the Soapstone Valley trail and an associated retaining wall with increased heights of 6.8 feet and 12 feet on the west side of Broad Branch Road. The use of architecturally compatible designs and materials for construction of the new sidewalk and wall will maintain the existing aesthetic quality.

RESIDENTIAL SECTOR. Views to the project area from the Gatehouse at La Villa Firenze will be partially obstructed by the construction of a 7-foot high retaining wall on the north side of the entrance driveway and by a 5-foot high retaining wall associated with the new concrete arch culvert to replace the existing Soapstone Creek Culvert south of the entrance driveway. The construction of these two vertical elements will narrow the view to the project area and Rock Creek Park beyond. A 4-foot high retaining wall will be constructed on the east side of Broad Branch Road and will not obstruct the view to Rock Creek Park.

A 129-foot long, 3.5-foot high retaining wall will be constructed north of the Brandywine Street and Broad Branch intersection. This vertical element represents minimal intrusion on the visual quality of the project area as viewed from the private residences' vantage point; only the top of the retaining wall could be partially visible through the trees and vegetation.

Views to the project area from the Ambassador's residences (Ivory Coast and Tunisia) will include construction of an 18-inch coping wall. This vertical element represents minimal intrusion on the visual quality of the project area as viewed from the Ambassador's residences hilltop vantage point.

Alternative 2 includes the construction of a 30-foot long, 12- inch high coping wall. This vertical element represents minimal intrusion on the visual quality of the project area as viewed from private residences located on Linnean Avenue which are located across a portion of Fort Circle Park from the roadway.

Use of architecturally compatible designs and materials for construction of the new concrete arch culvert over Soapstone Creek, retaining walls, and outfall headwalls would maintain the aesthetic quality associated with the rural feel of views from residences.

EDUCATIONAL/INSTITUTIONAL SECTOR. Alternative 2 includes the construction of a 30-foot long, 12-inch high coping wall. This vertical element represents minimal intrusion on the visual quality of the project area as viewed from the Carnegie Institution hilltop vantage point.

ALTERNATIVE 3

BROAD BRANCH ROAD SECTOR. Similar to Alternative 2, the visual quality of Broad Branch Road between Linnean Avenue and 27th Street and on the west side of Broad Branch Road between 27th Street and Beach Drive will change from natural or landscaped vegetation on the hill slopes to discontinuous retaining walls. Under Alternative 3, proposed retaining walls will vary in height from 2.5 feet to 13 feet and range in length from 62 feet to 434 feet. In addition, a sidewalk will be introduced along the west side of Broad Branch Road.

Retaining walls located on the east side of Broad Branch Road between 27th Street and Beach Drive are associated with Broad Branch and Rock Creek Park. The visual quality will change from natural trees and vegetation along the stream banks to discontinuous retaining walls with a visible height of 3.5 feet and ranging in length from 10 feet to 470 feet. With all of the retaining walls on the east side measuring 3.5 feet in visible height, views into Rock Creek Park and Fort Circle Park from the roadway will be visible over the retaining walls for vehicle occupants, cyclists, and pedestrians.

Use of architecturally compatible designs and materials for construction of the new retaining walls would maintain the aesthetic quality associated with the rural feel of the roadway along the edge of Rock Creek Park and match the rural architectural elements, such as Grant Road Bridge, that are characteristics of the Park.

ROCK CREEK PARK SECTOR. Proposed retaining walls on the east side of Broad Branch Road (foreground) will most likely be viewed in their entirety from the top of the wall to the stream bottom within the Rock Creek sector. From Ridge Road/Walking Trail, the retaining walls are 8.25 feet, 10 feet, and 11.5 feet high; and from Grant Road, the retaining wall is 15.75 feet high. Only portions of the retaining walls on the west side of Broad Branch Road (background) will be visible above the foreground retaining walls from the Ridge Road/Walking Trail vantage point. Other vertical elements include replacement of the Soapstone Creek Culvert with a concrete arch culvert and the headwalls of three outfalls.

Use of architecturally compatible designs and materials for construction of the new concrete arch culvert over Soapstone Creek, retaining walls, and outfall headwalls would maintain the aesthetic quality associated with the rural feel of the trail and roadway along the edge of Rock Creek Park and match the rural architectural elements such as the existing Soapstone Creek Culvert that are characteristics of the Park.

RESIDENTIAL SECTOR. Views to the project area from the Gatehouse at La Villa Firenze will be partially obstructed by the construction of a 8.25-foot high retaining wall on the north side of the entrance driveway and by a 5-foot high retaining wall associated with the new concrete arch culvert to replace the existing Soapstone Creek Culvert south of the entrance driveway. The construction of these two vertical elements will narrow the view to the project area and Rock Creek Park beyond. A 4- foot high retaining wall will be constructed on the east side of Broad Branch Road and will not obstruct the view to Rock Creek Park. A sidewalk will also be installed but this horizontal element will not affect the visual quality.

A 110-foot long, 11-foot high retaining wall and a 63-foot long, 7-foot high retaining wall will be constructed north of the Brandywine Street and Broad Branch intersection; a 105-foot long 6.25-foot high retaining wall would be constructed south of the intersection. These retaining walls provide hill slope stability and protection for the new sidewalk. These vertical elements represent minimal intrusion on the visual quality of the project area as viewed from the private residences' vantage point; only the top of the retaining walls could be partially visible through the trees and vegetation.

Views to the project area from the Ambassador's residences (Ivory Coast and Tunisia) will include construction of 89-foot long, 14.5-foot high retaining wall on the north side of Broad Branch Road, and a 135-foot long, 5.5-foot high retaining wall and a 220-foot long, 8.5-foot high retaining wall along the hill slopes south of Broad Branch Road to provide hill slope stability and protection for the new sidewalk. These vertical elements represent a visual intrusion of the project area as viewed from the Ambassador's residences hilltop vantage point.

Alternative 3 includes the construction of a 20-foot long, 12-inch high coping wall and installation of an at grade sidewalk. These horizontal and vertical elements represents minimal visual intrusions to the project area as viewed from private residences located on Linnean Avenue which are located across a portion of Fort Circle Park from the roadway.

Use of architecturally compatible designs and materials for construction of the new concrete arch culvert over Soapstone Creek, retaining walls, and outfall headwalls would maintain the aesthetic quality associated with the rural feel of the views from residences.

EDUCATIONAL/INSTITUTIONAL SECTOR. Alternative 3 includes the construction of a 20-foot long, 12-inch high coping wall and installation of an at grade sidewalk. These horizontal and vertical elements represent minimal visual intrusion to the project area as viewed from the Carnegie Institution hilltop vantage point.

ALTERNATIVE 4

BROAD BRANCH ROAD SECTOR. As with Alternatives 2 and 3, the visual quality of Broad Branch Road between Linnean Avenue and 27th Street and on the west side of Broad Branch Road between 27th Street and Beach Drive will change from natural or landscaped vegetation on the hill slopes to discontinuous retaining walls. The proposed walls vary in height from 2.5 feet to 15.75 feet and range in length from 15 feet to 519 feet. Similar to Alternative 3, a sidewalk will be installed along the west side of Broad Branch Road.

Retaining walls located on the east side of Broad Branch Road between 27th Street and Beach Drive are associated with Broad Branch and Rock Creek Park. The visual quality will change from natural trees and vegetation along the stream banks to discontinuous retaining walls with a visible height measuring 3.5 feet and ranging in length from 31 feet to 317 feet. With all of the retaining walls on the east side measuring 3.5 feet in visible height, views into Rock Creek Park and Fort Circle Park from the roadway will be visible over the retaining walls for vehicle occupants, cyclists, and pedestrians.

Use of architecturally compatible designs and materials for construction of the new retaining walls would maintain the aesthetic quality associated with the rural feel of the roadway along

the edge of Rock Creek Park and match context with the rural architectural elements such as Grant Road Bridge that are characteristics of the Park.

ROCK CREEK PARK SECTOR. Proposed retaining walls on the east side of Broad Branch Road (foreground) will most likely be viewed in their entirety from the top of the wall to the stream bottom. From Ridge Road/Walking Trail, the retaining walls are 7.5 feet, 8.75 feet, 9.5 feet, and 13.75 feet high; and from Grant Road, the retaining wall is 16.25 feet high. Only portions of the retaining walls on the west side of Broad Branch Road (background) will be visible above the foreground retaining walls from the Ridge Road/Walking Trail vantage point. Other vertical elements include replacement of the Soapstone Creek Culvert and the headwalls of three outfalls.

Use of architecturally compatible designs and materials for construction of the new concrete arch culvert over Soapstone Creek, retaining walls, and outfall headwalls would maintain the aesthetic quality associated with the rural feel of the roadway along the edge of Rock Creek Park and match context with the rural architectural elements such as the existing Soapstone Creek Culvert that are characteristics of the Park.

RESIDENTIAL SECTOR. Views to the project area from the Gatehouse at La Villa Firenze will be partially obstructed by the construction of a 6.25-foot high retaining wall on the north side of the entrance driveway and by a 5-foot high retaining wall associated with the new concrete arch culvert to replace the existing Soapstone Creek Culvert south of the entrance driveway. A 5.75-foot high retaining wall will be constructed on the east side of Broad Branch Road and the combination of these three vertical elements will obstruct the view to the project area and Rock Creek Park beyond. A sidewalk will also be installed but this horizontal element will not affect the visual quality.

A 519-foot long, 6.5-foot high retaining wall will be constructed north of the Brandywine Street and Broad Branch intersection; a 96 foot long 7.25-foot high retaining wall would be constructed south of the intersection. These retaining walls provide hill slope stability and protection for the new sidewalk. These vertical elements represent minimal visual intrusion of the project area as viewed from the private residences' vantage point; only the top of the retaining walls could be partially visible through the trees and vegetation.

Views to the project area from the Ambassador's residences (Ivory Coast and Tunisia) will include construction of 101-foot long, 13-foot high retaining wall on the north side of Broad Branch Road and four retaining walls (15 feet long, 6.25 feet high; 56 feet long, 8 feet high; 87 feet long, 11.75 feet high; and 78 feet long, 6.25 feet high) along the hill slopes south of Broad Branch Road to provide hill slope stability and protection for the new sidewalk. These vertical elements represent visual intrusion of the project area as viewed from the Ambassador's residences hilltop vantage point.

Alternative 4 includes the construction of a 105-foot long, 2.5-foot high retaining wall and installation of an at grade sidewalk. These horizontal and vertical elements represents minimal intrusion on the visual quality of the project area as viewed from private residences located on Linnean Avenue which are located across a portion of Fort Circle Park from the roadway.

Use of architecturally compatible designs and materials for construction of the new concrete arch culvert over Soapstone Creek, retaining walls, and outfall headwalls would maintain the aesthetic quality associated with the rural feel of the views from the residences.

Option C - T-Intersection at Brandywine Street. Option C is associated with only the Residential Sector. Option C consists of reconfiguring the original Y-intersection at Brandywine Street and Broad Branch Road, into a T-intersection under all Candidate Build Alternatives and includes installing sidewalks and crosswalks as part of Alternatives 3 and 4 only. No additional vertical elements will be introduced with this option under Alternatives 2, 3 and 4.

EDUCATIONAL/INSTITUTIONAL SECTOR. Alternative 4 includes the construction of a 105-foot long, 2.5-foot high retaining wall and installation of an at-grade sidewalk. These horizontal and vertical elements represent minimal intrusion on the visual quality of the project area as viewed from the Carnegie Institution hilltop vantage point.

4.3.8.1 Scenic Easements

ALTERNATIVES 2, 3, 4, ALTERNATIVE 2 OPTIONS, AND OPTION C

There are no easements located within the project vicinity; therefore, there would be no impact to scenic easements.

4.3.9 HEALTH AND SAFETY

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under this alternative, no improvements would be made, and Broad Branch Road would continue to have inadequate facilities for pedestrian and non-motorized vehicle use. Lack of appropriate lighting, sidewalks, marked crossings, speeding vehicles, and a narrow winding roadway with poor sight distances would remain, generating unsafe passage for pedestrians and bicyclists. Drainage issues would remain, degrading infrastructure.

Under the No Action Alternative, the project area facilities would remain inadequate, posing a continued risk to public safety and resulting in moderate, adverse, local, long-term impacts.

ALTERNATIVE 2 AND ALTERNATIVE 2 OPTION A

Alternative 2 will include a new culvert carrying Broad Branch Road over Soapstone Creek. The new structure will accommodate increased flow volumes in order to mitigate hydraulic issues to the extent practicable.

This alternative would have moderate, beneficial, local, long-term effects as public safety would improve over existing conditions with the repair of degraded facilities, improved lighting, and improved stormwater facilities.

ALTERNATIVES 3, 4, AND ALTERNATIVE 2 OPTION B

Under these alternatives, this project would have moderate, local, long-term, beneficial impacts as public safety would improve over existing conditions with the addition of designated non-motorized infrastructure (sidewalk, crosswalks, and/or bike lane), repair of degraded facilities, improved lighting, and stormwater facilities. Alternatives 3 and 4 will include a new culvert

carrying Broad Branch Road over Soapstone Creek. The new structure will accommodate increased flow volumes in order to mitigate hydraulic issues to the extent practicable.

Option C – T-Intersection at Brandywine Street. Reconfiguring the intersection at Brandywine Street to a T-intersection would minimize crash risk for northbound drivers on Broad Branch Road turning left onto Brandywine Street, reduce speeds at the intersection, improve sight distances for southbound traffic on Broad Branch, and enhance stormwater management in the project area resulting in minor, long-term impacts to health and safety.

4.3.10 Community Resources

Community Facilities

Alternative 1 – No Action Alternative

The No Action Alternative would have no impact on community facilities in the general project vicinity.

Alternatives 2, 3, 4, and Options

The Candidate Build Alternatives will provide improved and maintained access to the Carnegie Institution and the Ingleside at Rock Creek – the two community facilities located on Broad Branch Road. The third major community facility, Hillwood Museum and Gardens, is not accessible from Broad Branch Road and its access will not be directly affected. Short-term inconveniences in accessing community facilities during construction may be experienced. Maintenance of traffic plans included in Appendix E and further refined as part of the project's final design should minimize such disruptions and will provide detour arrangements during events of road closures.

Temporary noise and vibration impacts to sensitive scientific equipment housed at the Carnegie Institution Department of Terrestrial Magnetism (DTM) may occur during roadway construction. Consultation with this community facility will be required to establish appropriate protocols and define scheduling during construction.

Emergency Services

Alternative 1 – No Action Alternative

The No Action Alternative would have no impact on emergency services in the general project vicinity.

Alternatives 2, 3, 4, and Options

Although there are many alternative routes that could be used, access via Broad Branch Road during construction would be limited resulting in minor, short-term, local, impacts to emergency services.

Access for motorized vehicles would improve post-construction with the upgrade of facilities and improved safety resulting from stormwater management and improved roadway engineering.

SCHOOLS

ALTERNATIVES 1, 2, 3, 4, AND OPTIONS

No schools are located in the project vicinity; therefore none of the alternatives would have an impact on schools.

PARKS AND RECREATION AREAS

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

The No Action Alternative would have no direct impact on park land. However, continued lack of maintenance of the project area would induce indirect impacts on the natural and biological resources of NPS lands. Erosion and sedimentation would gradually worsen as the road structure deteriorates, causing continued sedimentation and debris to enter Park lands. The No Action Alternative would result in moderate, long-term, indirect impacts to NPS land, natural and biological resources, and the water quality of waterways if the roadway is left in its current state and not rehabilitated.

NPS PARK LANDS

ALTERNATIVE 2

Despite alternative routes that could be used to access NPS park lands, including Rock Creek Park, Soapstone Valley Park, and Fort Circle Park, access to these parks via Broad Branch Road during construction would be limited resulting in minor, short-term, local, impacts to NPS parkland under Alternative 2. Construction of Alternative 2 would require temporary disturbance on Rock Creek Park property, as indicated in **Table 4-8.** Other than temporary limited accessibility during construction, no disturbance, land use, or tree removal would occur in either Soapstone Valley or Fort Circle Park under Alternative 2. Project work will be planned and scheduled to allow for the least disruption of road and park use and coordinated with park staff to identify any concerns.

Table 4-8. Park Property Impacts

RESOURCE	NO ACTION	ALT 2	OPTION A	OPTION B	ALT 3	ALT 4	OPTION C
Rock Creek Park NPS Lands							
Number of trees impacted on park property	–	–	–	3	4	21	–
Area of temporary park impact from cut and fill/grading	–	91	–	1,706	324	4,182	–
Area of permanent park impact from ROW acquisition	896	–	–	–	39	2,252	–
Area of permanent park impact from construction without ROW acquisition (e.g., sidewalk to parking lot at Beach Drive)	–	–	–	1,192	1,719	1,772	–
District DPR Triangle Park at Brandywine Street							
Number of trees impacted on park property	–	–	–	–	–	–	3
Area of temporary park impact from cut and fill/grading	–	–	–	–	–	–	3,502
Area of permanent park impact from ROW acquisition	–	–	–	–	–	–	3,502

This alternative would have moderate, long-term, beneficial impacts to all NPS land. Access for motorized vehicles would improve post-construction with the upgrade of facilities and improved safety resulting from stormwater management and improved roadway engineering. Maintenance and operational activities would remain essentially unchanged.

ALTERNATIVE 2 WITH OPTION B- SIDEWALK

Alternative 2 with Option B includes a sidewalk and retaining wall on the west side of roadway in the southern part of the project corridor to connect the Soapstone Valley Trailhead to a NPS parking lot on Beach Drive. The sidewalk and retaining wall would extend from the end of DDOT right-of way into NPS Rock Creek Park right-of-way. The construction of the sidewalk would include temporary impacts during construction (approximately 1,706 square feet) and permanent impacts with the removal of three trees and addition of impervious surface but would only require a construction easement and no right-of-way would be acquired. The new sidewalk would have the beneficial impact of improving linkages between two NPS park resources (Rock Creek Park and Soapstone Valley Park). Alternative 2 with Option B would provide for safer access to park resources with the addition of a new pedestrian facility in this segment of the project corridor.

Like Alternative 2, other than temporary limited accessibility during construction, no disturbance, land use, or tree removal would occur in either Soapstone Valley Park or Fort Circle Park under Alternative 2 with Option B. Project work will be planned and scheduled to allow for the least disruption of road and park use and coordinated with park staff to identify any concerns.

ALTERNATIVES 3 AND 4

Like Alternative 2 with Option B, Alternatives 3 and 4 include a sidewalk and retaining wall on the west side of roadway in the southern part of the project area to connect the Soapstone Valley Trailhead to a NPS parking lot on Beach Drive. The sidewalk would extend from the end of DDOT right-of way into NPS Rock Creek Park right-of-way. The construction of the sidewalk would include temporary impacts during construction and permanent impacts with the removal of trees and addition of impervious surface but would have the beneficial impact of improving linkages between two NPS Park resources (Rock Creek Park and Soapstone Valley Park). Alternatives 3 and 4 would provide for safer access to park resources by the addition of non-motorized facilities. In addition to sidewalks, Alternatives 3 and 4 will include crosswalks which would allow for safer access to the existing multi-use trail and park facilities than provided by existing facilities.

Alternatives 3 and 4 would also require temporary disturbance in Rock Creek Park near existing retaining walls for the construction of new walls. Some of the proposed new retaining walls in Alternatives 3 and 4 traverse both DDOT and NPS Rock Creek Park property. This area would not alter the ability of the park to function as intended, and would enhance safe access to park facilities for both motorized and non-motorized users.

Like Alternatives 2, other than temporary limited accessibility during construction, no disturbance, land use, or tree removal would occur in either Soapstone Valley Park or Fort

Circle Park would occur under Alternatives 3 and 4. All project work should be planned and scheduled to allow for the least disruption of road and park use and coordinated with park staff to identify any concerns.

OPTION C

No NPS park resources occur in the intersection of Broad Branch Road with Brandywine Street, NW. There will be no impact to NPS park resources from proposed improvements to this intersection under Option C.

DISTRICT DPR TRIANGLE PARK AT BRANDYWINE STREET

ALTERNATIVES 2, 3, 4 AND OPTIONS A AND B

A triangle park/traffic island maintained by the District DPR is located at the center of the existing Broad Branch Road intersection with Brandywine Street. Under Alternatives 2, 3, and 4, the existing Y-intersection would not be reconfigured and the traffic island/triangle park would remain. There may be a slight increase in the amount of land included within the park/traffic island when the traffic lanes on Brandywine Street are reconstructed under the Candidate Build Alternatives. Under Alternative 2 no impacts to triangle park would occur, other than temporary inaccessibility during roadway construction, because no changes are proposed. Implementation of Options A and B under Alternative 2 would have no impact on the triangle park. Under Alternatives 3 and 4, a new sidewalk would be constructed at the base of the triangle to provide pedestrian access across the triangle park to the new sidewalks on the western side of Broad Branch Road. The existing curbing around the park would be altered to allow for wheelchair ramps/aprons at roadway crosswalks.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Option C includes the reconfiguration of the intersection at Brandywine Street and Broad Branch Road, NW. The triangle park/traffic island at the center of the existing Y-intersection would be changed to create a new T-intersection resulting in long term, adverse effects to this park resource. The triangle park primarily provides green space as opposed to a recreational area; the inclusion of rain gardens at the interior corners of the new T-intersection would increase the amount of green space at this intersection by 1,898 square feet, resulting in long-term beneficial impacts to park-provided green space. Coordination with the District DPR will be conducted to determine if District agency management/oversight of this resource will change after roadway reconstruction and if the rain gardens will be managed by District DPR.

4.3.11 UTILITIES AND INFRASTRUCTURE

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, existing utilities, including water and sewer lines, Washington Gas lines, Potomac Electric Power Company (PEPCO) overhead and underground electric lines, DC Street lighting, Verizon overhead and underground communication lines, Comcast overhead and underground cable lines, and their house service connections, would not be impacted as the roadway work would be limited to routine maintenance. This work would

include milling and resurfacing of pavement areas with minor base repair depending upon the subsurface condition encountered.

ALTERNATIVES 2, 3, 4, AND OPTIONS

During construction of the Candidate Build Alternatives, existing utilities on Broad Branch Road such as those that run under roadway pavement and parallel to or across the roadway would have to be considered. Continuous coordination with utility companies during design and construction would be required to avoid utilities conflicts as much as possible, and the contractor would be required to contact Miss Utility to identify and mark all utilities prior to earth disturbance activities. The potential extent of utility relocations for each of the alternatives is presented in **Table 4-9**.

Table 4-9. Potential Utility Relocations (Linear Feet within Limits-of-Disturbance)

ALTERNATIVE	WATERMAIN	SANITARY SEWER	ELECTRICITY AND COMMUNICATIONS	GAS
2	2,450	11,851	1,784	1,582
Option A	0	0	0	0
Option B	0	0	0	0
3	2,749	12,187	1,840	1,715
4	2,870	12,299	1,837	1,672
Option C	0	0	0	0

4.4 TRANSPORTATION

Potential impacts on the transportation system elements – bicycle and pedestrian facilities, the roadway network, and transit services – are discussed in the subsections below.

4.4.1 BICYCLE AND PEDESTRIAN NETWORK

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, DDOT would not reconstruct Broad Branch Road. The roadway would be repaved but infrastructure would remain deteriorated and damage from stormwater runoff would continue unabated. The No Action Alternative would not provide any improvements to the regional pedestrian and bicycle network because of the lack of facilities to serve those modes along the existing roadway. Lack of facilities, degraded infrastructure, poor sight-lines, and poor lighting would perpetuate existing unsafe conditions and inadequate access for these modes to Broad Branch and surrounding areas.

ALTERNATIVE 2 AND ALTERNATIVE 2 WITH OPTION A- RETAINING WALL

Under Candidate Build Alternative 2, DDOT would reconstruct Broad Branch Road improving infrastructure and stormwater management. The upgraded roadway would improve driving and biking conditions, however separate pedestrian and bicycle facilities would not be included.

During construction, temporary impacts to cyclists and pedestrians could occur due to the inaccessibility of segments of Broad Branch Road. Minor, beneficial impacts to the bicycle and pedestrian network would result from the upgrade in roadway conditions. Improvements in

sight lines and horizontal curves would improve the existing unsafe conditions and provide improved access for these modes to Broad Branch Road and surrounding areas.

ALTERNATIVE 2 WITH OPTION B- SIDEWALK

Under Option B, the sidewalk linking Soapstone Creek Trail to the parking lot near Beach Drive would provide improved pedestrian access between the two points.

ALTERNATIVES 3 AND 4

Under Candidate Build Alternatives 3 and 4 continuous sidewalks along the length of the reconstructed roadway will provide an improved pedestrian facility. Pedestrians would no longer be required to travel on the roadway or the limited adjoining areas. Alternatives 3 and 4 include sidewalks and crosswalks as part of the improved intersection of Broad Branch Road and Brandywine Street to connect to the continuous sidewalks on the west side of the roadway and to existing sidewalks on Brandywine Street. Under Alternative 3 bicyclists would be required to share the travel lanes with motorized vehicles and would contend with the same travel conflicts encountered today. Alternative 4 would provide a dedicated bike lane and removes the conflict providing for a safer travel way for both modes. These alternatives would have moderate, beneficial, impacts to the pedestrian and bicycle network. During construction, temporary disruption could occur to pedestrians and cyclists using Broad Branch Road.

Option C- T-Intersection at Brandywine Street. Reconfiguring the intersection at Brandywine Street to a T-intersection would minimize crash risk for northbound drivers on Broad Branch Road turning left onto Brandywine Street, reduce speeds at the intersection, improve sight distances for southbound traffic on Broad Branch, and enhance stormwater management in the project area. These improvements to safety would result in minor, long-term beneficial impacts to pedestrians and cyclists using this area of Broad Branch Road.

4.4.2 ROAD NETWORK

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

The No Action Alternative would have minor, short-term beneficial impacts. DDOT would not reconstruct Broad Branch Road; however the roadway would be resurfaced, resulting in minor improvements to the driving surface. Improvements from a resurfacing project would be expected to last about two years. Without reconstruction of the sub-grade, it is anticipated that the driving surface would deteriorate again within a short time frame.

ALTERNATIVES 2, 3, 4 AND OPTIONS A AND B

Under Alternatives 2, 3, and 4, and the project options, DDOT would reconstruct and improve the roadway. The roadway would be excavated to a depth of approximately three feet and then reconstructed with appropriate material. Minor changes to the alignment and profile would be made to improve sight distances. It is anticipated that an alignment that meets the requirements of a 25 mph design speed can be achieved throughout the full length of the corridor with grading changes to adjacent properties and the installation of retaining walls. During reconstruction of the road and stormwater management infrastructure, short-term,

temporary impacts would occur on the local streets due to truck traffic generated by construction activities. Specifically, the contractor would have to remove and haul the existing concrete, asphalt, and other materials by dump truck and would be required to deliver clean fill, asphalt or concrete, and other construction materials. It is anticipated that construction access could be provided via Military Road to Nevada Avenue, NW, to the north of the project area and via Tilden Street or Blagden Avenue to Beach Drive, NW in the southern part of the project area. DDOT would prepare a maintenance of traffic plan that would identify routes to be used by the contractor to minimize traffic impacts and disruption to residential areas and Park land.

Due to the limited right-of-way and narrow roadway, portions of Broad Branch Road would be closed to all but local and emergency vehicle traffic during construction. Therefore, in order to minimize impacts, it is recommended that reconstruction occur in phases with identification of potential detour plans during each phase of construction. The preliminary detour plans are presented in **Appendix E**.

Although Alternatives 2, 3, and 4 and the project options would have minor short-term impacts because of temporary traffic delays and congestion during the transport and delivery of construction materials, no long-term impacts are expected on the roadway network with the reconstruction of Broad Branch Road. Once reconstructed, Broad Branch Road will have a superior travel surface and will function as it has in the past. In addition, improved turn movements at the intersection with 27th Street will result in long-term beneficial impacts to the level of service along the roadway.

Year 2030 forecasts show that traffic volumes are expected to remain at current levels with the exception of increased commuter traffic during the peak periods. With this increase in traffic, the level of service at the Broad Branch Road five-way intersection at Nevada Avenue, 32nd Street, and Linnean Avenue will drop from Level of Service (LOS) B to C in the AM Peak hour but remain at LOS C in the PM peak hour (**Table 4-10**). Level of service is expected to remain constant for both peaks between existing and future at the Broad Branch Road intersections with 27th Street (LSO B) and Beach Drive, NW (LOS F). Level of service at both the Grant Road/Davenport Street, NW and Brandywine Street intersections is expected to decline - at the PM Peak for Grant Road, and at both AM and PM Peaks for Brandywine Street. After construction, the addition of a dedicated left-turn lane from southbound Broad Branch Road to 27th Street (under Alternative 2) and from northbound Broad Branch Road to Brandywine Street (under Alternatives 2, 3, and 4) would raise the level of service at both intersections. The use of traffic calming techniques under all of the Candidate Build Alternatives and options is recommended to control speeds.

OPTION C – T-INTERSECTION AT BRANDYWINE STREET

Improved turn movements at the intersection of Broad Branch Road with Brandywine Street, NW with the reconfiguration of this intersection from a Y- to a T-intersection under Option C will result in long-term beneficial impacts to the level of service along the roadway.

Table 4-10. Existing and Year 2030 Intersection Levels of Service

INTERSECTION WITH BROAD BRANCH ROAD	PEAK HOUR[1]	EXISTING	2030
Nevada Avenue, NW / 32nd Street, NW Linnean Avenue, NW[2]	AM	B	C
	PM	C	C
27th Street, NW	AM	B	B
	PM	B	B
Grant Road, NW / Davenport Street, NW	AM	F	F
	PM	C	F
Brandywine Street, NW	AM	B	D
	PM	C	D
Beach Drive, NW / Blagden Avenue, NW	AM	F	F
	PM	F	F

[1]AM Peak Hour between 7:30 and 8:30 AM; PM Peak Hour between 5:30 and 6:30 PM.

[2]This intersection has five approaches and Level of Service (LOS) was analyzed in intersection capacity utilization (ICU) methodology

4.4.3 TRANSIT

ALTERNATIVES 1, 2, 3, 4 AND OPTIONS

No bus or other transit facilities is located in the project corridor, therefore the alternatives would have no impact on transit operations or the public's ability to use transit in the area.

4.5 AIR QUALITY

Impacts to air quality can generally occur in three ways: 1) by raising the vehicle emission levels near a project site through an increase in vehicular traffic; 2) by introducing new stationary sources, such as the case with development; and 3) through the generation of airborne dust from construction activities. The Broad Branch Road project is not anticipated to impact air quality with respect to either of the first two ways. As explained below, air quality impacts due to construction will be temporary.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, Broad Branch Road would remain in its current state. Therefore, this alternative would have no impact to air quality.

ALTERNATIVES 2, 3, 4, AND OPTIONS

Project-Level Carbon Monoxide (CO) Conformity. The District is currently in maintenance for the CO air quality standard. However, under 40 CFR § 93.126 and as noted in Section 3.5.2, the Broad Branch Road project is exempt from air quality conformity determination because it is a rehabilitation project.

Project-level Fine Particulate Matter (PM2.5) Conformity. While the Broad Branch Road project is located within the Washington DC-MD-VA $PM_{2.5}$ nonattainment area, the project does not meet the definition of a project of air quality concern according to 40 CFR 93.123(b)(1).

Mobile Source Air Toxics (MSATs). As noted in Section 3.5.4, the Broad Branch Road project falls into the first category of "Projects with No Meaningful Potential MSATs Effects or Exempt Projects" based on the fact that this project will have "no meaningful impacts on traffic volumes or vehicle mix." Therefore, no analysis or discussion of MSATs is needed for the project.

Greenhouse Gas (GHG) Impacts. The Broad Branch Road project would not increase roadway capacity and would not increase vehicle emissions or vehicle miles traveled. Therefore, the project would not contribute to an increase in greenhouse gases.

In terms of all of the pollutant categories noted above, it is important to note that implementation of any of the Candidate Build Alternatives would not contribute additional air emissions when compared to the No Action Alternative. This is because traffic volumes, vehicle mix, speeds, and traffic controls would be the same between the No Action Alternative and the Candidate Build Alternatives. There would, therefore, be no impact to air quality for any of the Candidate Build Alternatives.

Construction Impacts. Construction impacts from any of the Candidate Build Alternatives and options would be similar across all alternatives, would be temporary, and there would be no long-term air quality impacts.

4.6 NOISE AND VIBRATION

As described in the DDOT Noise Policy (January 10, 2011), "the Federal Highway Administration (FHWA) Noise Standard requires that noise abatement measures be considered when traffic noise impacts are identified for Type I Federal projects." The definitions of project types for purposes of noise analysis and abatement, as indicated by *Highway Traffic Noise: Analysis and Abatement Guidance*, FHWA, June 2010 (Revised January 2011), is provided below.

Type I Project: The following projects are considered Type 1 projects:

1. The construction of a highway on new location; or,
2. The physical alteration of an existing highway where there is either:
    i. Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
    ii. Substantial Vertical Alteration. A project that removes shielding, therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
3. The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
4. The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,

5. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,

6. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,

7. The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

Type II Project: A Federal or Federal-aid highway project for noise abatement on an existing highway. For a Type II project to be eligible for Federal-aid funding, the highway agency must develop and implement a Type II program in accordance with section 772.7(e). *[Note: DDOT does not currently have a Type II program.]*

Type III Project: A Federal or Federal-aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

The proposed improvements to Broad Branch Road will take place along the existing alignment of the road and will not add lanes or increase capacity. Alterations to the horizontal and vertical alignment of the roadway will not be substantial based on the definitions included for a Type I project. Therefore, the Broad Branch Road project is classified as a Type III project that does not require a noise analysis (note that, at this time, DDOT does not have a Type II program).

As noted in Chapter 3, the Broad Branch Road project is located in an area with sensitive land uses, including a mix of residential, park, and education (institutional) land uses, which can be categorized as Activity Category B based on Noise Abatement Criteria. Current noise levels in the project area range from 55 to 62 decibels (dBA), which do not approach or exceed the FHWA noise abatement criteria (NAC) of 67 dBA. None of the Candidate Build Alternatives are anticipated to change traffic volumes, speeds, or vehicle mix as compared to the No Action Alternative.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

No new noise sources would be created in the Broad Branch Road project area as a result of the No Action Alternative; therefore, impacts to the existing noise and vibration levels are not expected to occur.

ALTERNATIVES 2, 3, 4 AND OPTIONS

All of the action alternatives and options would have a short-term impact to noise and vibration levels in the study area during the construction phase. The length and degree of noise impacts associated with construction activities would vary and would be caused by activities associated with removal of the existing infrastructure and reconstruction of the roadway and stormwater management facilities. However, these noise impacts would be temporary and could be minimized by implementing BMPs, such as time restrictions, during construction.

No appreciable impacts to noise and vibration would occur from implementation of the Candidate Build Alternatives because, as noted above, they would not increase traffic or change

the vehicle mix, speeds, or traffic controls. Insertion of low-level retaining walls and coping walls are not intended to provide any attenuation of traffic-generated noise levels (as provided by noise walls), nor will they result in detectable levels of noise attributed to reverberations from these structures.

4.7 HAZARDOUS WASTE AND MATERIALS

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Based on a review of available data and site inspection, no evidence of recognized environmental concerns was identified within the project area. Therefore, there would be no impact from hazardous wastes/materials under the No Action Alternative.

ALTERNATIVES 2, 3, 4, AND OPTIONS

Based on a review of available data and site inspection, no evidence of recognized environmental concerns was identified within the project area. Construction of the Candidate Build Alternatives will have no impact on hazardous waste and materials. Although it is unlikely, undocumented hazardous materials could be uncovered during construction. If contaminated soils, water, or other hazardous materials are discovered, construction should stop and the situation assessed by the contract officer. The notification of appropriate authorities, including coordination with the DDOE, and proper removal, disposal, treatment, and/or remediation of the material should be evaluated and suitable measures taken, as necessary.

In order to address any potential risk to public safety, the contractor for the proposed construction will prepare and implement a plan for management and disposal of controlled hazardous materials and contaminated soil and groundwater that may be encountered during construction activities, as defined in *DC Department of Transportation Design and Engineering Manual, Chapter 4.11 (Hazardous Waste and Materials/Contaminated Soils)*.

No impacts due to hazardous materials are anticipated and no additional coordination will be required.

4.8 ENERGY CONSERVATION

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Currently there are no energy conservation measures being conducted along the alignment. Under this alternative no changes would be made to the project area; however, routine pavement maintenance would continue. Therefore, there would be no impact on energy conservation.

ALTERNATIVES 2, 3, 4, AND OPTIONS

One of the largest energy consumers for urbanized areas is water treatment. Utilizing natural stormwater management through various BMPs possible under these alternatives will reduce the load to water treatment facilities. Adding or upgrading stormwater facilities to an area that previously lacked adequate resources will reduce the need for maintenance and therefore energy consumption.

Lighting options to improve the safety of this corridor are being considered. Using energy efficient lighting would reduce energy consumption in the corridor while improving safety.

4.9 CONSTRUCTION IMPACTS

The proposed rehabilitation of the 1.5 miles of roadway is estimated to take between 24 and 36 months. (see Section 2.3). Short-term or temporary impacts during construction could be related to land use, community access, changes in traffic patterns, utility conflicts, water resources, wildlife, cultural resources, air quality, noise and vibration, and hazardous materials. Potential impacts would be similar for each of the Candidate Build Alternatives and are described in the following sections. Methods to avoid or minimize the impacts are included in each section as well. A public information program will be used to inform the public of the duration of construction phasing, construction methods, possible effects, quality control measures, and communication available to them.

Based on the analysis summarized in the following sections, construction impacts resulting from Candidate Build Alternatives 2, 3 and 4 are not considered significant in either context or intensity in accordance with the CEQ definition. Temporary impacts would be minimized as discussed, and would be offset by the beneficial long-term effects of the project.

4.9.1 LAND USE AND ACCESS

Rehabilitation of the existing two-lane roadway would be limited to the existing alignment. No major changes in access or its location are proposed which would promote or prohibit additional development. As such no changes in local land use are anticipated as a result of the roadway construction

During construction of the roadway, access will be temporarily limited to all but local and emergency vehicle traffic, due to the narrow roadway. These short-term disruptions are unavoidable and will be minimized to the extent possible with construction phasing, traffic management, and detour plans. Construction for each of the Candidate Build Alternatives will be conducted in four phases – each with a specific detour plans. Preliminary detour plans are presented in Appendix E and provide continuous access to all points during construction – although some lengthened trips could be required. Final detour plans will be incorporated into the final design in accordance with DDOT's *Bluebook for Standard Specifications for Highways and Structures – 616 Traffic Control* (DDOT, 2009e).

Any construction that occurs outside of DDOT right-of-way will require temporary easements.

4.9.2 UTILITIES AND INFRASTRUCTURE

All utilities (electrical power, water and sewer, telephone and cable) would be maintained throughout construction, although unforeseen brief, temporary outages may occur during connections. These would be maintained to a minimum and the affected properties would be given advance notice of any planned outages. DDOT will maintain continuous coordination with utility companies during design and construction to ensure utility conflicts are avoided to the extent possible.

4.9.3 WATER RESOURCES

Short-term water quality impacts may result from required in-stream work and erosion following ground disturbance and earthmoving operations. Excessive turbidity caused by

suspended soils and other solids can harm aquatic animals and plants. Deposition of the suspended solids may alter streambeds, interfere with plant production and fish spawning, smother bottom-dwelling fauna, and reduce substrate utilization. Eroded material may also contain organic material and nutrients which may result in algae increases and reduction in dissolved oxygen.

As a part of this project, erosion and sediment control plans, stormwater management plans, and a "treatment train" of BMP techniques will be developed to minimize direct waterway disturbance and sediment from construction areas. Measures may include berms, dikes, working in the dry, silt barriers, netting, mulch, temporary and permanent seeding, avoidance of stream crossings, crossings of waterways at right angles when necessary, sediment basins, mulch, and other methods. The construction contractor would be required to comply with the conditions and pollution control measures specified in DDOT's *Bluebook for Standard Specifications for Highways and Structures – 628 Erosion and Sediment Control* (DDOT, 2009e).

In-stream work will require permits with the USACE and DDOE in accordance with Sections 402 and 404 of the Clean Water Act.

4.9.4 Wildlife and Habitat

Minor, short-term impacts to terrestrial and aquatic organisms and their habitat would occur during construction. Temporary removal of vegetation will occur within the limits of disturbance. These areas will be replanted with a native seed mix and trees in consultation with NPS for areas bounding Rock Creek Park. All trees will be protected during construction or replaced according to DDOT's *Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers* (DDOT, 2009e).

Project work could result in temporary displacement of mobile animal populations that are disturbed by the activities. Construction of the Candidate Build Alternatives will be primarily in previously disturbed areas and edges of fragmented urban forest, which provide marginal habitat for terrestrial animals. Reconstruction activities and operation of machinery would be disruptive to wildlife and would likely cause animals to retreat to deeper parts of the forest. However, it is expected that disjoined wildlife would repopulate the site when construction is complete and vegetation becomes reestablished.

Construction activities may also cause direct mortality of terrestrial and aquatic wildlife unable to escape construction equipment. In-stream work and stream crossing with equipment would temporarily disturb aquatic habitat. Such activities will be restricted to the extent practicable. Improved stormwater management would allow riparian and in-stream habitats downstream to reestablish. Erosion and sediment control plans, stormwater management plans, and BMPs will be used during construction to protect water quality and habitat integrity.

4.9.5 Cultural Resources

Construction impacts to archaeological sites may result from any ground-disturbing action in the area of an NRHP-eligible or potentially eligible archaeological site, or modification to such a site that can permanently impact the physical integrity of that resource. Construction impacts to architectural resources include demolition, alteration of architectural traits, structural instability

through vibration, short-term audio intrusions during construction, and visual intrusions to historic settings. Visual or audible intrusions to the setting during construction may result in only temporary impacts during construction unless they permanently alter or destroy those characteristics or qualities that make it potentially eligible for inclusion in the NRHP.

Use of heavy grading equipment will cause ground vibration which will damage or topple historic retaining walls along Broad Branch. Rock Creek Park stone and metal boundary markers may be disturbed through cut and fill activities during roadway reconstruction. These markers may be inadvertently moved during roadbed preparation near the DDOT right-of-way or covered with fill but would be re-set. The historic setting of the Rock Creek Park Historic District (RCPHD) and a trail element of the Rock Creek Park cultural landscape along Broad Branch will be temporarily impacted by visual intrusions during construction. Visual intrusions may include the presence of large machinery, excavated roadway and earth, spoil and fill piles, stockpiling of new construction material, and road blocks and detours. Temporary audible intrusions, including increased noise from construction activity such as excavation; large vehicle movement, braking, and back-up signals; and construction crews, may also occur to the trail component of the Rock Creek Park cultural landscape.

A Memorandum of Agreement (MOA) will be prepared by FHWA and DDOT in consultation with consulting parties to resolve and mitigate the adverse effects to historic properties in accordance with Section 106 of the NHPA. This MOA will include stipulations to address temporary construction impacts.

4.9.6 Air Quality

Construction impacts on air quality are evaluated qualitatively due to the limited availability of detailed information (at this stage of the project) regarding equipment used during construction. Construction activities are estimated be to be completed in 24 to 36 months. Therefore, a project level conformity analysis is not required, and construction emissions do not need to be accounted for in a "hot spot analysis" per 93.123(c)(5).

Air quality impacts could occur primarily as a result of emissions from heavy-duty construction equipment such as bulldozers, backhoes, and cranes; diesel-fueled mobile sources such as trucks; diesel and gas-fueled generators; and on and offsite project-related vehicles such as service trucks and pickups. Fugitive PM_{10} and $PM_{2.5}$ emissions are associated with site preparation, demolition, ground excavation, grading, cut-and-fill operations, and structure erection. Fugitive dust emissions could also be generated as a result of construction-related traffic and wind erosion of uncovered demolition and excavation area. PM emissions would vary from day to day, depending on the level of activity, specific operations, and weather condition. Hot, dry weather conditions could aggregate particulate matter emissions. Emission rates would depend on soil moisture, silt content of soil, wind speed, and the amount and type of operating equipment. Larger dust particles (PM_{10}) would settle near the source and fine particles ($PM_{2.5}$) would be dispersed over greater distances from the construction site.

In addition, there would be engine exhaust from construction workers' personal vehicles, heavy trucks, and construction equipment. These emissions would primarily consist of NO_x, SO_2, PM,

CO, and VOCs, which are common at construction sites. Emissions from operating equipment and vehicles during hot summer months would contribute to ozone formation.

If construction traffic or lane closures were to increase congestion in the area, emissions form traffic would increase temporarily and would be limited to the area surrounding the construction site. Some construction phase (particularly during paving operations using asphalt) would result in short-term odors, which could be detectable to some people near the project site, but would be diluted as distance from the construction site increases.

District regulations regarding dust control and other air quality emission reduction controls, including DCMR 20 and other measures specified in *DDOT's Bluebook for Standard Specifications for Highways and Structures – 107.17 Environmental Protection,* would be followed. Construction generated dust would be further reduced through the following measures:

- Mist water over demolition or excavation operations.
- Cover trucks when moving materials.
- Minimize unnecessary vehicular and machinery activities.
- Provide vegetative cover for all exposed soils during and upon completion of construction.

4.9.7 NOISE

Noise impacts from construction activities are a function of noise generated by construction equipment, the proximity of sensitive uses to construction activities, and the duration of the construction effort. The contractor will be required to adhere to D.C. Law 2-53, District of Columbia Noise Control Act of 1977 and all provisions thereof, area noise ordinances for night work from 7 pm to 7 am, and to the restrictions on equipment as defined in DDOT's *Bluebook for Standard Specifications for Highways and Structures – 105 Control of Work, 103 Standard Contract Provisions, Article 17, and 107.17 Environmental Protection* (DDOT, 2009e); except as permitted by a variance.

The noise control measures listed below could be used to minimize, to the greatest extent feasible, the noise levels in all areas surrounding construction activities.

- Use of shields, impervious fences or other physical sound barriers to reduce noise.
- Use of sound retardant housings or enclosures around noise producing equipment.
- Use of effective intake and exhaust mufflers on internal combustion engines and compressors.
- Conduct truck loading, unloading and hauling operations so that noise is kept to a minimum.
- Advise the engineer in writing of proposed haul routes prior to securing haul permit.
- Subject to the approval of the engineer, place stationary equipment to minimize noise impact on surrounding community.

4.9.8 VIBRATION

Construction activities have the potential for producing vibration levels that maybe perceptible. Some construction activities could generate vibration levels high enough to cause damage to structures in the immediate roadway corridor (i.e, historic retaining walls and drainage structures). Even where vibration levels are lower or imperceptible, vibrations could produce ground-borne noise. The effects of ground-borne vibration could affect extremely sensitive activities such as those conducted at the Carnegie Institution's Department of Terrestrial Magnetism (DTM) building.

Recognizing the possibility that some damage could occur to adjacent structures, a pre-construction survey, including a detailed photographic record of existing structures, could be conducted. Restitution or repairs could be made based on actual damages if they are determined to be a result of construction activities.

Suggested vibration control measures to minimize, to the greatest extent feasible, the vibration levels include the following:

- Specify realistic vibration limits in contract documents.
- Require the contractor to submit a list of operations that may generate vibration and work with the contractor to reduce the magnitude and/or duration.
- Conduct a monitoring program during construction.
- Monitor vibrations at nearest sensitive locations throughout the construction period.
- Route construction equipment to avoid impacts to sensitive receptors.
- Minimize duration of vibration impacts.
- Implement MOA stipulations to mitigate vibration impacts on historic properties.

4.9.9 HAZARDOUS MATERIALS

The introduction of hazardous materials into the air, soil or water is specifically prohibited by the Clean Air Act (regulating both mobile and stationary source emissions), the Clean Water Act (regulating discharges of pollutants into Waters of the United States), the Occupational Safety and Health Act (ensuring worker/workplace safety), and the Toxic Substances Control Act (addressing the use and disposal of specific chemicals). Although well regulated, accidental discharges of petroleum products such as engine motor oils or fuels could occur within a construction site. All necessary precautions would be taken to ensure that spills are prevented. In the unlikely event of a spill, measures would be implemented to prevent pollutants from reaching storm drains or surface water (e.g, Broad Branch and Soapstone Creek) directly.

Emissions of volatile materials from construction machinery are regulated through EPA. Actions to be taken in case of an accidental petroleum spill would be included in the project's Health and Safety Plan, approved by DDOT during the procurement process to select a contractor for the reconstruction project.

4.10 INDIRECT AND CUMULATIVE EFFECTS

Indirect effects are those that may be caused by the proposed action but occur later in time or farther in distance than the direct impacts discussed elsewhere in this document. The most common indirect effects associated with road and highway projects have to do with induced development, and the impacts of such development that would not otherwise occur if the projects were not constructed. Lands surrounding the proposed project corridor currently can be accessed by the existing road network. As such, they could be subject to development or redevelopment even in the absence of implementation of this project. Much of the land along the west side of the road already is in residential uses and substantial additional development is not expected in the foreseeable future. Land along the east side of the road consists entirely of federal lands owned by the NPS as part of Rock Creek Park. As such, it is very unlikely that this land will be developed in the future. Rather, the land will be managed by the NPS in accordance with the Park's General Management Plan to preserve and enhance the recreational and natural and cultural resource protection functions of the Park. The proposed project would not provide any new direct access to adjacent undeveloped lands where access does not currently exist. Furthermore, the proposed improvements will not increase roadway vehicular capacity. Accordingly, no indirect impacts are anticipated. In summary, the proposed project would serve traffic generated by development on adjoining lands and beyond the limits of the project, but would not cause any further such development. Moreover, the project is consistent with local comprehensive planning regarding land use goals in the surrounding area and transportation in the project corridor.

Cumulative effects are the incremental effects of an action when added to other past, present, and reasonably foreseeable future actions, regardless of the sponsor of those actions. The assessment of cumulative effects requires an assessment of the impact that past and present actions have had on the environmental resources in the project area that would also be impacted by the proposed project. The current affected environment is a reflection of the impacts of those past and present actions over time. Additionally, a review of cumulative effects requires an assessment of how reasonably foreseeable future actions may affect the same environmental resources that would be directly affected by the project. Reasonably foreseeable future actions include the following:

- Implementation of the Rock Creek Park General Management Plan by the National Park Service.
- Improvements to Broad Branch Road between Linnean Avenue and Beach Drive along the western border of Rock Creek Park (approximately 1.5 miles in length).
- Replacement of the 27th Street NW, Bridge at the intersection of 27th Street, NW and Broad Branch Road NW, adjacent to Rock Creek Park.

Table 4-11 summarizes the more prominent environmental resources in the project area that would be impacted by the proposed project, the impact that these resources have experienced from past and present actions, the incremental impact expected from the proposed project, identification of potential reasonably foreseeable future actions, and the potential impact that may occur from other reasonably foreseeable future actions in or near the project area.

Despite the dramatic changes in the landscape that have occurred over time due to human settlement in the surrounding area, the intensity of the incremental impacts of the project are considered small, when viewed in the context of impacts from other past, present, and reasonably foreseeable future actions and would not rise to a level that would cause significant cumulative impacts.

Table 4-11. Summary of Cumulative Effects

RESOURCES	IMPACTS FROM PAST AND PRESENT ACTIONS	IMPACT FROM PROPOSED PROJECT	POTENTIAL FUTURE ACTION	POTENTIAL IMPACT ON RESOURCES FROM POTENTIAL FUTURE ACTIONS
Air Quality	Decrease in regional air quality as population, industry, and traffic increases, offset by improvements to air quality resulting from increasingly stringent emissions and fuel standards.	No violations of NAAQS; because traffic volumes are low, localized pollutant emissions also are low and contributions to regional pollutant burdens are low.	Continuing development in region, accompanied by increasing regional traffic volumes; construction of other roadway improvements as programmed in the Constrained Long Range Plan.	Continuing improvements in vehicle and fuel technology, and resulting cleaner emissions, anticipated to offset increases in volumes of vehicles on regional travel network and potential impacts from other road improvements; cumulative effect not substantial.
Noise	Increase in noise levels as urbanization and traffic increase.	Not a Type I project, no noise analysis required. No highway capacity increases and no significant changes in horizontal or vertical alignment.	Continued urbanization with accompanying increases in traffic volumes.	Cumulative effect not significant.
Waters of the U.S., Including Wetlands	Conversion or culverting of water resources to make way for development; degradation of water quality from urban runoff, impervious surfaces, increased runoff and sediment volumes.	Repair/replacement of drainage structures and other construction would cause temporary siltation during construction, which would be minimized through implementation of best management practices and stormwater management measures. Long-term improvements to receiving waters are expected as a result of the proposed stormwater management elements included.	Additional impervious surfaces and conversion of resources for growing urban area; long-term water quality effects could occur as a result of increased impervious surface; spills from vehicles; an increase in non-point source pollutants from asphalt, grease, oil, metals, nutrients, nitrogen, deicing salts, roadside vegetation management chemicals, and suspended solids and other elements associated with roadways. Implementation of Rock Creek Park General Management Plan by National Park Service will include elements to improve water quality in Rock Creek and tributaries.	Adverse effects offset by enforcement of stormwater management, erosion and sediment controls, and water quality permitting requirements under local and federal laws, including compensation requirements; cumulative effect not substantial.

RESOURCES	IMPACTS FROM PAST AND PRESENT ACTIONS	IMPACT FROM PROPOSED PROJECT	POTENTIAL FUTURE ACTION	POTENTIAL IMPACT ON RESOURCES FROM POTENTIAL FUTURE ACTIONS
Terrestrial and Aquatic Habitat and Wildlife	Conversion of wildlife habitat to other uses, and degradation of remaining habitat from urban impacts and fragmentation. Preservation of wildlife habitat in Rock Creek Park.	Minor impacts to vegetated areas that border the roadway as part of construction activities.	Continued loss due to urbanization and population growth. Implementation of Rock Creek Park General Management Plan by National Park Service will include elements to preserve and enhance wildlife habitat in Rock Creek Park.	Potential further degradation of remaining habitat due to urban influences, offset by preservation/enhancement activities in Rock Creek Park; cumulative effect not substantial.
Rock Creek Park	Minor impacts from in-park infrastructure (roads, trails, recreational and maintenance facilities). Minor impacts from other nearby projects, such as Broad Branch Road Improvements.	Minor use of Park lands; temporary vegetation impacts; minor visual impacts, particularly during the construction period. Stormwater management elements will reduce severe erosion and sedimentation occurring in streams within the Park.	Implementation of Rock Creek Park General Management Plan by NPS will continue to preserve and protect Park resources.	Implementation of Rock Creek Park General Management Plan by NPS will continue to preserve and protect Park resources.

4.11 PERMITS AND AUTHORIZATIONS

The following resources may require coordination with regulatory agencies and/or permits if they will be affected by the proposed project.

4.11.1 HAZARDOUS MATERIALS SITES

Coordination with the DDOE is recommended if hazardous substances occur in the construction area to determine permit requirements and appropriate management procedures.

4.11.2 WATER QUALITY

Section 402 of the Clean Water Act (33 U.S.C. 1344) regulates the discharge from any point source into the waters of the US and requires a permit from the US EPA. Activities that would require a permit include construction dewatering operations associated with activities such as utility excavation, culvert installation, trench digging, or other subsurface activities.

The placement of dredge or fill materials into waters of the US, including wetlands, is regulated under Section 404 of the Clean Water Act and requires a permit from the USACE. Construction activities that could require a permit include extended roadway embankments, stream crossings, and culvert rehabilitations. The DDOE provides the Water Quality Certificate for Section 402 and 404 permits.

In accordance with the DCMR Title 21-Chapter 5 Water Quality and Pollution, an erosion and sediment control plan is required for 50 square feet of land disturbance and a stormwater management plan is required for 5,000 square feet of land disturbance.

In accordance with the Clean Water Act, work resulting in alteration of, or work within a floodplain, waterway, or wetland within the District of Columbia will require a Jurisdictional Determination and Joint Federal/State Application for the Alteration of any Floodplain, Waterway, Wetland from the USACE.

4.11.3 Tree Removal

All trees will be protected during construction and replaced according to DDOT's *Bluebook for Standard Specifications for Highways and Structures* - Section 611 Trees, Shrubs, Vines, and Ground Covers.

According to DCMR Title 24 – Chapter 37, removal of any tree with a circumference greater than 55 inches, except for tree of heaven (*Ailanthus altissima*), mulberry (*Morus species*), and Norway maple (*Acer platanoides*), requires a **Special Tree Removal Permit** from the District Department of Transportation Urban Forestry Administration.

A tree survey was conducted of the project area to identify trees greater than four inches in diameter; however, continued coordination with NPS and is required for any work that may have an effect on trees and shrubs with a diameter greater than half an inch within Park property. This includes work done outside Park property that may cause damage to species within Park property (root damage).

4.11.4 Floodplains

In accordance with DCMR Title 20 – Chapter 31 Flood Hazard Rules, a building permit shall be required for all construction and development occurring in an identified floodplain area and a floodplain development plan and study are required.

In accordance with NPS DO 77-2 Floodplain Management, construction within floodplains on NPS land requires authorization from the NPS Water Resources Division.

4.11.5 Parks

In accordance with NPS DO 53 Special Park Uses, restoration and stabilization of streams within park property would require a **Special Use Permit** from the National Park Service.

Continued coordination with NPS will be conducted for any work that may have an impact on trees and shrubs with a diameter greater than half an inch within Park property. This includes work done outside Park property that may cause damage to species within park property (root damage).

Continued coordination with the District DPR will be conducted for any work that may have impact on the triangle park at the intersection of Brandywine Street and Broad Branch Road.

4.11.6 Cultural Resources

Because the proposed action involves federal assistance and federal permitting, licensing, or approval (36 CFR 800.16(y)), the project is under the purview of Section 106 of the NHPA. Section 106 consultation is ongoing to assess impacts to cultural resources.

4.12 SECTION 4(f) AND 6(f) EVALUATION

4.12.1 SECTION 4(f)

This Section 4(f) Evaluation has been prepared in compliance with Section 4(f) of the U.S. Department of Transportation Act of 1966, which is codified at 49 U.S.C. § 303 and 23 U.S.C. § 138, implementing regulations at 23 C.F.R. § 774.

Section 4(f) permits the use of land from a publicly-owned public park, recreation area, wildlife or waterfowl refuge, or land of a historic site of national, state, or local significance only if there is no feasible and prudent avoidance alternative, to the use of land from the property; and the action includes all possible planning to minimize harm to the property resulting from such use.

The authority to administer Section 4(f) and make Section 4(f) approvals resides with the Secretary of the U.S. Department of Transportation (USDOT). The Secretary of Transportation has delegated the authority for administering Section 4(f) to the Federal Highway Administration (FHWA) Administrator in 49 C.F.R. § 1.48.

The proposed rehabilitation of Broad Branch Road (the project) requires FHWA approval because FHWA has oversight responsibility for the Federal-aid program and is participating in the funding of the project. In addition, the project requires use of land from properties protected by Section 4(f), and therefore, FHWA approval is also required in order for this Section 4(f) use to proceed.

4.12.1.1 Project Description

The FHWA in conjunction with DDOT and in cooperation with the NPS, are proposing the rehabilitation of a 1.5-mile segment of Broad Branch Road, NW, between Linnean Avenue, NW and Beach Drive, NW, a portion of which abuts the southwestern border of Rock Creek Park (see **Figure 4-1**). The existing two-lane Broad Branch Road lies almost entirely within DDOT right-of-way and is maintained by DDOT. The eastern edge of the roadway between 27th Street and Beach Drive, borders Rock Creek Park, which is owned and maintained by the NPS.

4.12.1.2 Purpose and Need

The purpose of the proposed action is to rehabilitate Broad Branch Road to satisfy operational and safety needs in a manner keeping with the setting of the project area. Context sensitive solutions will take into account the adjoining land uses including residential, foreign diplomatic properties, institutional developments and wooded areas, including Rock Creek Park. Improvements to the corridor will consider all modes of transportation including motorized vehicles, bicycles, and pedestrians.

The needs for improvements to Broad Branch Road relate primarily to deficiencies in the existing roadway infrastructure and stormwater management system; the safety of motorists, pedestrians, and bicyclists; and linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems (i.e., Rock Creek Park Trail and Soapstone Valley Trail).

Figure 4-1. Project Location

4.12.1.3 Proposed Action

The proposed action is to reconstruct Broad Branch Road and control stormwater runoff. Other elements are also being considered for inclusion within the roadway cross-section, including bicycle and pedestrian facilities. Along its 1.5-mile length, Broad Branch Road varies in terms of its topography and roadway cross-section. The DDOT-owned right-of-way ranges from approximately 33 to 120 feet along Broad Branch Road. The narrowest width (33 feet) is generally located at the southern end of the corridor, south of Brandywine Street, which limits the types of improvements at this end of the corridor. While the DDOT-owned right-of-way width generally increases north of Grant Road and Davenport Street, the proximity of Broad Branch stream and Rock Creek Park presents design constraints along the east side of the roadway up to where the Broad Branch stream crosses the road approximately 1,000 feet from the northern terminus of the project. Given these varying features, one cross-section is not appropriate for the full length of the roadway and the project considered variable cross-sections based on the project purpose and need and the available right-of-way.

4.12.1.4 Regulatory Requirements

KEY CONSIDERATIONS IN SECTION 4(F)

A Section 4(f) property is any publicly owned land of a public park, recreational area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance.

As noted in 23 C.F.R. § 774.3, Section 4(f) Approvals, a transportation project approved by a U.S. Department of Transportation (U.S. DOT) modal agency (for this project, FHWA) may not use a Section 4(f) property unless it is determined that:

1. There is no feasible and prudent avoidance alternative, as defined in § 774.17, to the use of land from the property; and
2. The action includes all possible planning, as defined in § 774.17, to minimize harm to the property resulting from such use.

As defined in 23 C.F.R. § 774.17, the use of a protected Section 4(f) property occurs when any of the conditions below are met:

1. When land [of the Section 4(f) property] is permanently incorporated into a transportation facility;
2. When there is a temporary occupancy of land [of the Section 4(f) property] that is adverse in terms of the [Section 4(f)] statute's preservation purpose as determined by the criteria in § 774.13(d); or
3. When there is constructive use of a Section 4(f) property as determined by the criteria in § 774.15.

The FHWA may determine that the use of Section 4(f) property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures)

committed to by the applicant, will have a *de minimis* impact, as defined in 23 C.F.R. § 774.17, on the property. The *de minimis* impact criteria and associated determination requirements vary by type of Section 4(f) property involved. For example, the use of a historic site may be *de minimis* if the Administration renders a "no adverse effect" in accordance with Section 106 of the NHPA.

A feasible and prudent avoidance alternative avoids using Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweighs the importance of protecting the Section 4(f) property. The feasible and prudent standard applies only to an alternative that fully avoids any use of a Section 4(f) property. It would not apply when choosing among alternatives that require the use of at least one Section 4(f) property. In assessing the importance of protecting the Section 4(f) property, it is appropriate to consider the relative value of the resource to the preservation purpose of the statute.

An alternative is not feasible if it cannot be built as a matter of sound engineering judgment.

An alternative is not prudent if:

- It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
- It results in unacceptable safety or operational problems;
- After reasonable mitigation, it still causes severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low income populations; or severe impacts to environmental resources protected under other Federal statutes;
- It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
- It causes other unique problems or unusual factors; or
- It involves multiple factors in paragraphs (3)(i) through (3)(v) of this definition, that while individually minor, cumulatively.

All possible planning to minimize harm means that all reasonable measures identified in the Section 4(f) evaluation to minimize harm or mitigate for adverse impacts and effects must be included in the project. With regard to historic sites, reasonable measures normally serve to preserve the historic activities, features, or attributes of the site as agreed by the Administration and the official(s) with jurisdiction over the Section 4(f) resource in accordance with the Section 106 consultation process outlined 36 C.F.R. § 800, Protection of Historic Properties.

If there is no feasible and prudent avoidance alternative and the use is not *de minimis*, then the FHWA may approve only the alternative that causes the least overall harm in light of the statute's preservation purpose. The least overall harm is determined by balancing the following factors, which are identified in 23 C.F.R. § 774.3(c)(1):

- The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);

- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the official(s) with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

If two or more alternatives are "substantially equal" in terms of harm to the 4(f) property, then FHWA may select any one of the alternatives being considered. Regardless, the alternative selected must include all possible planning to minimize harm to Section 4(f) property, such as compliance with Section 106, as applicable.

An "individual Section 4(f) evaluation must be completed when approving a project that requires the use of Section 4(f) property if the use . . . results in a greater than de minimis impact and a programmatic Section 4(f) evaluation cannot be applied to the situation." (Section 4(f) Policy Paper, July 20, 2012).

ASSESSING "USE" OF SECTION 4(F) PROPERTIES

Section 4(f) defines "use" of a protected resource in three ways:

1. Land from a 4(f) site is permanently incorporated into a transportation facility,
2. There is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservationist purposes (23 C.F.R. 771.135(p)(7)), or
3. When there is a constructive use of land (23 C.F.R. 771.135(p) (2)).

The most common form of use is when land is permanently incorporated into a transportation facility. This can occur when land from a Section 4(f) property is either purchased outright as transportation right-of-way or when the applicant for Federal-aid funds has acquired a property interest that allows permanent access onto the property such as a permanent easement for maintenance or other transportation-related purpose.

The second form of use is commonly referred to as temporary occupancy and results when Section 4(f) property, in whole or in part, is required for project construction-related activities. The property is not permanently incorporated into a transportation facility but the activity is considered to be adverse in terms of the preservation purpose of Section 4(f). Section 23 CFR 774.13(d) provides the conditions under which "temporary occupancies of land…are so minimal as to not constitute a use within the meaning of Section 4(f)." If all of the conditions in this section are met, the temporary occupancy does not constitute a use. If one or more of the conditions for the exception cannot be met, then the Section 4(f) property is considered used by the project even though the duration of onsite activities is temporary. Written agreement by the official(s) with jurisdiction over the property with respect to all the conditions is necessary and

should be retained in the project file. Assurances that documentation will eventually be obtained via subsequent negotiations are not acceptable. Also, it is typical that the activity in question will be detailed in project plans as an integral and necessary feature of the project.

The third and final type of use is called constructive use. A constructive use involves no actual physical use of the Section 4(f) property via permanent incorporation of land or a temporary occupancy of land into a transportation facility. A constructive use occurs when the proximity impacts of a proposed project adjacent to, or nearby, a Section 4(f) property result in substantial impairment to the property's activities, features, or attributes that qualify the property for protection under Section 4(f). As a general matter this means that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost. The types of impacts that may qualify as constructive use, such as increased noise levels that would substantially interfere with the use of a noise sensitive feature such as a campground or outdoor amphitheater, are addressed in 23 CFR 774.15. A project's proximity to a Section 4(f) property is not in itself an impact that results in constructive use. Also, the assessment for constructive use should be based upon the impact that is directly attributable to the project under review, not the overall combined impacts to a Section 4(f) property from multiple sources over time.

Exceptions to Section 4(f) are listed in 23 CFR 774.13 and include temporary occupancies of protected resources so long as the following conditions are met:

- Duration must be temporary and there should be no change in ownership of the land;
- Scope of work must be minor;
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
- The land being used must be fully restored to a condition which is at least as good as that which existed prior to the project; and,
- There must be documented agreement of the officials with jurisdiction over the Section 4(f) resource regarding the above conditions.

4.12.1.5 Section 4(f) Properties

Section 4(f) and the implementing regulations in 23 C.F.R. § 774 define a Section 4(f) property as publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance. A historic site includes any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

Several protected Section 4(f) resources or properties occur within the project area where construction would take place, including areas needed for staging, materials stockpiling, and utility relocations, and are listed below:

- Rock Creek Park Historic District,
- the Soapstone Creek Culvert,
- the Gatehouse at La Villa Firenze, and
- Rock Creek Park; Fort Circle Park.

Detailed descriptions of the NRHP-eligible resources are presented in Section 3.2.4 and parklands are discussed in Section 3.3.9.

ROCK CREEK PARK HISTORIC DISTRICT

The Rock Creek Park Historic District (RCPHD) consists of 1,754 acres of land dominated by picturesque landscapes featuring forested areas, streams, valleys, meadows, and sloping hills. The Park was listed in the NRHP in 1991 based on themes of architecture, community planning and development, conservation, entertainment and recreation, industry, landscape architecture, military, and horticulture. Important persons associated with the history of the Park include Joshua Pierce and landscape architects Frederick Law Olmsted, Jr. and John C. Olmsted. The Park as a whole retains a high degree of integrity of design, workmanship, location, feeling, association, and setting. Architectural features associated with the RCPHD located within the project area include three bridges, two roads, a historic trail, a culvert, stormwater outfalls with stone headwalls, stone retaining walls, and stone boundary markers.

SOAPSTONE CREEK CULVERT

The Soapstone Creek Culvert, located at the confluence of Soapstone Creek and Broad Branch stream, is a six-foot wide, stone arch culvert constructed in 1898 during a period of initial improvements to adjacent Rock Creek Park. The downstream wing walls were most likely added in 1934 when the culvert was extended. Prominent features of Soapstone Creek Culvert include a downstream headwall with wing walls, an upstream headwall and retaining wall, and a red brick-lined barrel arch. The Soapstone Creek Culvert is considered individually eligible for the NRHP and is also a contributing element to the RCPHD.

GATEHOUSE AT LA VILLA FIRENZE

The residence located at 4400 Broad Branch Road, NW is a Tudor Revival style house constructed between 1925 and 1927 that serves as a gatehouse for La Villa Firenze, currently the Italian Ambassador's residence. The gatehouse is a one and a half story building with stucco exterior, half-timbering and two stone chimneys. The original stone retaining walls along Broad Branch Road at the entrance to the driveway and the original stone pillars flanking the driveway are intact. A small portion of the stone retaining walls are located within DDOT right-of-way. The gatehouse at La Villa Firenze is considered a contributing element to this residential complex which considered NRHP-eligible.

ROCK CREEK PARK

Rock Creek Park was established in 1890 by an Act of Congress for scenic and recreational enjoyment. It encompasses federal reservation 339 and is 1,754 acres (Bushong 1990b). The Park is a natural reserve within a heavily urbanized area and includes an extensive network of unnamed hiking footpaths and horseback riding trails, scenic roads, Western Ridge Trail, access

to the horse stables and equestrian field, the Rock Creek Information Center, the Nature Center, and the Planetarium.

4.12.1.6 Other Section 4(f) Properties

Other Section 4(f) properties adjacent to the project area include two recreational resources: Fort Circle Park and Soapstone Valley Park. Although the Triangle Park at the intersection of Broad Branch Road and Brandywine Street is owned by the District DPR, it is not considered a Section 4(f) property because its major purpose is not for park, recreation, or refuge activities but rather its serves as green space within a traffic island (FHWA, 2013).

The project would not require the constructive use of these properties. The reasons for this assessment are provided below.

FORT CIRCLE PARK

Five areas at the northern end of the project corridor are part of the NPS Fort Circle Parks system, parks dedicated to preserve the chain of defenses set up to protect Washington during the Civil War. Three of the land parcels comprising the park near the project area occur west of the end of the Broad Branch Road. One area occurs south of Broad Branch Road and north of Linnean Avenue. The fifth area occurs on the north side of Broad Branch Road and west of 27th Street, ending at the property boundary with the Ivory Coast ambassador's residence. One former parcel in the NPS Fort Circle Parks system was transferred to the District DPR.

SOAPSTONE VALLEY PARK

Soapstone Valley Park, a management unit within Rock Creek Park, is not located in the project alignment, however is accessible via Soapstone Valley Trail which is located on DDOT right-of-way and has an entrance on Broad Branch Road.

4.12.1.7 Alternatives Considered

DDOT has defined four alternatives and three options for the rehabilitation of Broad Branch Road. These include the No Action Alternative, three Candidate Build Alternatives, and three options. The descriptions of the alternatives and options are presented in Chapter 2.

During the alternatives development process, several alternative strategies and concepts were considered but eliminated. These alternatives are discussed in Section 2.4.1 and include:

- Potential widening to increase vehicular capacity,
- Upgrading the roadway to typical collector roadway design standards,
- Raising the roadway profile above the 10-year floodplain,
- Changing the roadway from a two-way to a one-way roadway to allow space for cyclists, and
- The provision of a shared-use path or bicycle lane on the west side of Broad Branch Road.

4.12.1.8 Impacts on Section 4(f) Properties

Four Section 4(f) properties will be impacted by the Candidate Build Alternatives: NRHP-listed RCPHD (including retaining walls and stormwater outfall headwalls that may be impacted from proposed reconstruction or demolition and replacement), the individually NRHP-eligible Soapstone Creek Culvert, NRHP-eligible gatehouse at La Villa Firenze, and Rock Creek Park (see Sections 3.2 and 3.3.9 for descriptions of these resources). Each of the Candidate Build Alternatives would impact, to some extent, the Section 4(f) properties identified (**Table 4-12)**.

Rock Creek Park Historic District

Construction of any of the three Candidate Build Alternatives would require permanent use and loss of contributing elements to the RCPHD: the demolition of segments of retaining walls and stormwater outfall headwalls. Temporary use of the original stone and metal boundary markers considered contributing elements to the RCPHD would occur but the markers would be re-set. Options A, B, and C would not use any contributing element to the RCPHD.

Soapstone Creek Culvert

Construction of any of the three Candidate Build Alternatives would require permanent use and demolition of the Soapstone Creek Culvert. Options A, B, and C would not use the Soapstone Creek Culvert.

Table 4-12. Summary of Use of Section 4(f) Properties

	ALTERNATIVE 2	OPTION A	OPTION B	ALTERNATIVE 3	ALTERNATIVE 4	OPTION C
NRHP-listed Rock Creek Park Historic District						
Temporary Use	Yes	No	No	Yes	Yes	No
Permanent Use	Yes	No	No	Yes	Yes	No
Loss of Function	Minimal	No	No	Minimal	Minimal	No
NRHP-eligible Soapstone Creek Culvert						
Temporary Use	No	No	No	No	No	No
Permanent Use	Yes	No	No	Yes	Yes	No
Loss of Function	Yes	No	No	Yes	Yes	No
NRHP-eligible Gatehouse at La Villa Firenze						
Temporary Use	No	No	No	No	No	No
Permanent Use	Yes	No	No	Yes	Yes	No
Loss of Function	Minimal	No	No	Minimal	Minimal	No
Rock Creek Park						
Temporary Use	Yes (outfall construction)	No	No	Yes (outfall construction)	Yes (outfall construction)	No
Permanent Use	Yes (91 square feet)	No	Yes (2,898 square feet)	Yes (2,082 square feet)	Yes (8,206 square feet)	No
Loss of Park Function	No	No	Minimal	No	No	No

GATEHOUSE AT LA VILLA FIRENZE

Construction of any of the three Candidate Build Alternatives would require permanent use and the demolition of the original stone retaining walls at the entrance to the driveway to the Gatehouse at La Villa Firenze, although a small portion of the walls occurs in DDOT right-of-way. Options A, B, and C would not use any features associated with the Gatehouse or other contributing elements of La Villa Firenze.

ROCK CREEK PARK

Permanent use of Rock Creek Park would increase with each Candidate Build Alternative. Construction of Alternative 2 would result in the permanent use of 91 square feet of Rock Creek Park based on cut-and-fill activities for the new road bed. Under Alternative 3, permanent use of 2,082 square feet of Rock Creek Park would occur for cut-and-fill activities for the road bed, acquisition of additional right-of-way for road, and sidewalk construction. Construction of Alternative 4 would result in permanent use of 8,206 square feet of Rock Creek Park based on cut-and-fill activities for the road bed, acquisition of additional for road, and sidewalk construction. Permanent use of 2,898 square feet of Rock Creek Park will be required for the installation of the sidewalk in Option B.

Temporary use of Rock Creek Park will be required for the excavation and replacement of stormwater outfall pipes under each Candidate Build Alternative; however, the ground surface would be restored to its original elevation and re-vegetated as appropriate.

Options A and C would not result in use of Rock Creek Park because both options are located on the west side of Broad Branch Road.

4.12.1.9 Evaluation of Section 4(f) Properties

The use of each of the four Section 4(f) properties identified in Section 5 was evaluated to:

1. Determine whether there is any feasible and prudent avoidance alternative to the use of land from the Section 4(f) property;

2. If there were no feasible and prudent avoidance alternative, determine which of the alternatives described in Section 7 would result in the least overall harm to the Section 4(f) property; and

3. Identify the planning and actions to be taken to minimize harm to the property resulting from the Section 4(f) use.

ROCK CREEK PARK HISTORIC DISTRICT

AVOIDANCE ALTERNATIVES

Avoidance Alternatives Considered. The primary intent of Section 4(f) is to avoid the use of or impacts to protected resources. The No Action Alternative is the only alternative that can completely avoid the use of contributing elements of the RCPHD within the project area.

The No Action Alternative would include short-term minor restoration activities (safety and routine maintenance) that would maintain the continuing operation of the existing roadway.

The No Action Alternative would avoid any use of contributing elements of the RCPHD (i.e., retaining walls and stormwater outfall headwalls). However, this alternative would not meet the established purpose and needs for the project. Routine maintenance of the existing roadway would not correct the deficiencies in the existing roadway infrastructure and stormwater management system; provide for increased safety of motorists, pedestrians, and bicyclists; and establish linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems (i.e., Rock Creek Park Trail and Soapstone Valley Trail).

Under the No Action Alternative, Broad Branch Road could also be completely closed to all vehicular and bicycle traffic, and, therefore, would avoid any use of contributing elements of the RCPHD. However, this option would prevent local traffic flow through along the west side of Rock Creek Park, and prohibit access to alleyways and private driveways to local residents. Although pedestrian traffic would continue, the road closure option would not correct the deficiencies in the roadway, would not improve stormwater management and would not increase public safety. For these reasons, neither of the No Action options would satisfy the stated purpose and need of the project.

Feasibility and Prudence Test. The Section 4(f) use of contributing elements of the RCPHD would involve demolition of segments of retaining walls and stormwater outfall headwalls. This Section 4(f) use applies to all three Candidate Build Alternatives.

The potential avoidance alternative, the No Action Alternative, was evaluated in terms of feasibility and prudence in meeting the purpose and need of the project and still avoiding the Section 4(f) use of contributing elements of the RCPHD. The No Action Alternative does not address the project's purpose and need and would not correct the deficiencies in the roadway, improve stormwater management and increase public safety. Implementation of the No Action Alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need and would result in unacceptable safety or operational problems; therefore, the No Action Alternative is not considered a prudent alternative to avoid the Section 4(f) use of contributing elements of the RCPHD.

Remaining Candidate Build Alternatives. Candidate Build Alternatives 2, 3, and 4 remain as the only alternatives that would address the purpose and need, but would still result in the Section 4(f) use of contributing elements of the RCPHD. All three Candidate Build Alternatives represent appropriate engineering designs that will correct the structural deficiencies in the roadway and improve stormwater management; therefore these alternatives are considered feasible. All three alternatives will improve safety and operational problems on Broad Branch Road, will not result in additional construction, maintenance, or operational costs of extraordinary magnitude, will not cause other unique problems or unusual factors, or create cumulative impacts of extraordinary magnitude. After mitigation measures are implemented to alleviate impacts to resources identified in the EA, these alternatives will not create additional social, economic, or environmental impacts; will not disrupt established communities; will not result in disproportionate impacts to minorities or low income populations; and will not create additional impacts to environmental resources protected under Federal statutes. All three

Candidate Build Alternatives are considered prudent. Therefore, there is no feasible and prudent alternative to the Section 4(f) use of contributing elements of the RCPHD.

LEAST HARM

There is no feasible and prudent alternative that avoids the Section 4(f) use of contributing elements of the RCPHD as well as the other three Section 4(f) properties. Therefore, it must then be determined which of the three remaining Build Alternatives (Alternatives 2, 3 and 4) would cause the least harm based on seven factors identified in 23 CFR 774.3(c)(1). Also noted in Section 4.12.1.4 is that only the alternative that causes the least overall harm may be approved. If two or more alternatives are substantially equal in terms of harm to Section 4(f) property(ies), any one of these alternatives may be selected.

The RCPHD is one of four Section 4(f) properties affected by the project, and each of them was evaluated separately in terms of the factors that determine a least harm alternative. The four Section 4(f) properties were then evaluated as a group to determine which alternative has the least overall harm with regards to all four properties.

The analysis considered proposed mitigation measures and the severity and location of the Section 4(f) use among the three Candidate Build Alternatives. The RCPHD is an historic property and in addition to Section 4(f), is protected under Section 106. The Section 106 consultation process is ongoing and the resolution of this process would indicate which of the three remaining alternatives would result in the least harm to contributing elements of the RCPHD in terms of the seven factors listed in 23 CFR 774.3(c)(1). Any conclusions regarding the application of these seven factors cannot be made until the Section 106 process is completed or when the MOA is signed.

Factor 1: The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property). Alternatives 2, 3, and 4 would all result in the demolition and replacement of contributing elements of the RCPHD (i.e., retaining walls and stormwater outfall headwalls). A Determination of Adverse Effect on Historic Properties in accordance with Section 106 would be recommended, and therefore, a MOA would be prepared, which would resolve the adverse effect from the demolition of the retaining walls and stormwater outfall headwalls. Upon completion of the Section 106 process, the mitigation measures identified in the MOA would provide information on which of the three Build Alternatives in terms of Factor 1 would result in the least harm to contributing elements of the RCPHD.

Factor 2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection. As noted above, each of the Candidate Build Alternatives would result in the demolition and replacement of contributing elements of the RCPHD to meet the purpose and need of the project. Although contributing elements such as the retaining walls and stormwater outfall headwalls associated with RCPHD would be demolished and replaced, loss of these contributing elements would not diminish the overall characteristics that define NRHP eligibility of the RCPHD.

Regardless of the Candidate Build Alternatives selected, mitigation measures as defined in the MOA would be implemented, which may lessen the severity of the harm to the resource. Similar to what is noted under Factor 1, the conclusion of the Section 106 consultation process would provide information on which of the three Build Alternatives in terms of Factor 2 would result in the least harm to contributing elements of the RCPHD.

Factor 3: The relative significance of each Section 4(f) property. The RCPHD is among three other Section 4(f) properties that would be affected by the project, regardless of the Candidate Build Alternatives selected. Its relative significance in comparison to the other three Section 4(f) properties is addressed in the overall determination of least harm.

Factor 4: The views of the official(s) with jurisdiction over each Section 4(f) property. The officials with jurisdiction over contributing elements of the RCPHD are the DC State Historic Preservation Officer (DC SHPO) and the National Park Service (NPS). DDOT has determined that contributing elements of the RCPHD need to be demolished and replace to correct deficiencies in the roadway, improve stormwater management and increase public safety on Broad Branch Road. To date, the DC SHPO has not stated a preference for an alternative, but is anticipated to concur with the Determination of Adverse Effect. The Section 106 effect determination and DC SHPO concurrence will be documented in the final Section 4(f) evaluation regarding Build Alternatives. The conclusion of the Section 106 consultation process may provide information on which of the three Candidate Build Alternatives in terms of Factor 4 would result in the least harm to contributing elements of the RCPHD.

Factor 5: The degree to which each alternative meets the purpose and need for the project. The two primary factors of the purpose and need of the project, to resolve deficiencies in the existing roadway infrastructure and stormwater management, are met by all three Candidate Build Alternatives. Candidate Build Alternatives 3 and 4 provide additional improvements to address other factors of the purpose and need: improve the safety of motorists, pedestrians, and bicyclists; and provide linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems. Upon completion and regardless of the Build Alternative, the demolition and replacement of retaining walls and stormwater outfall headwalls would correct the structural deficiencies of Broad Branch Road and improve stormwater management.

Factor 6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f). Impacts have been identified to land areas beyond the existing roadway infrastructure, for in-stream work in Broad Branch, and removal of vegetation. Additional disturbance beyond the existing roadway ranges from 3.2 acres for Alternative 2 to approximately 5 acres for Alternative 4. Erosion and Sedimentation Control and Stormwater Management Plans will be developed in accordance with DC Municipal Regulations to minimize off-site impacts. In-stream work will require permits with the USACE and DDOE in accordance with Sections 402 and 404 of the Clean Water Act. Impacts to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground

Covers. When construction is completed, and the rehabilitated Broad Branch Road becomes fully operational, the project area (including both Section 4(f) and non-Section 4(f) resources) would revert back to the environmental conditions that existed prior to construction. The Project is essentially rebuilding existing transportation infrastructure. Therefore, in terms of Factor 6, the Build Alternatives appear to be equal.

Factor 7: Substantial differences in costs among the alternatives. The estimated cost of the Candidate Build Alternatives ranges from $29 million to $37.1 million. The difference in costs are appreciable (approximately 28 percent between highest and lowest) and they would be considered substantial for purposes of Section 4(f). Candidate Build Alternative 2 would cost approximately $29 million. Candidate Build Alternative 3 would cost approximately $34.2 million. Candidate Build Alternative 4 would cost approximately $37.1 million. Candidate Build Alternative 2 is the least costly.

PLANNING AND MEASURES TO MINIMIZE HARM

The RCPHD qualifies as a Section 4(f) property because it is also an historic property. An historic property is any district, site, building, structure or object that is on or eligible for listing on the National Register of Historic Places. NHPA Section 106 requires federal agencies, such as FHWA, to take into account the effects of their undertakings or actions on historic properties. The federal approvals needed to allow the Project to proceed are considered as federal undertakings or actions.

The Section 106 process requires that the federal agency first determine whether the undertaking could affect historic properties. If so, the federal agency must consult with the DC SHPO and others, which may involve the public and consulting parties (those with a particular interest in historic preservation). If not, federal agency would have no further Section 106 obligations with respect to the undertaking by submitting a "no historic properties affected" determination. If historic properties are affected, the federal agency would submit either an "adverse effect" or "no adverse effect" determination.

The Section 106 process for the project was formally initiated on August 16, 2011. The Section 106 process for the project is ongoing. A Determination of Adverse Effect will be recommended for the Project because of the demolition of contributing elements of the NRHP-listed RCPHD (retaining walls and stormwater outfall headwalls. The results of the Section 106 consultations for the Project will provide information on the Section 4(f) evaluation by:

- Obtaining the views of the DC SHPO and NPS, the officials with jurisdiction over the RCPHD;
- Identifying the measures to minimize harm that could preserve the historic activities, features, or attributes of the RCPHD in consultation with the DC SHPO and NPS in accordance with the consultation process under 36 CFR part 800; and
- Understanding whether the measures to minimize harm to contributing elements to the RCPHD would result in any impacts or benefits to the surrounding community or environmental resources outside of the Broad Branch Road corridor.

Regardless of the Candidate Build Alternative, mitigation measures to address the adverse effects to the RCPHD would be outlined in the MOA prepared in accordance with Section 106. The MOA mitigation measures specifically on the contributing elements of the RCPHD would be subject to input from the DC SHPO, NPS, and the consulting parties, and the final version would be signed at a minimum by the FHWA and DC SHPO.

The project's complete Section 106 consultation process, which will provide information to the Section 4(f) evaluation regarding the minimization of harm to the contributing elements of the RCPHD, will be fully disclosed in the final NEPA document. The Final Section 4(f) Evaluation will be based upon the conclusion of the Section 106 consultation.

SOAPSTONE CREEK CULVERT

AVOIDANCE ALTERNATIVES

Avoidance Alternatives Considered. The primary intent of Section 4(f) is to avoid the use of or impacts to protected resources. The No Action Alternative is the only alternative that can completely avoid the use of the Soapstone Creek Culvert within the project area.

Under the No Action Alternative, Broad Branch Road could be completely closed to all vehicular and bicycle traffic, and, therefore, would avoid any use of the Soapstone Creek Culvert. However, this option would prevent local traffic flow through along the west side of Rock Creek Park, and prohibit access to alleyways and private driveways to local residents. Although pedestrian traffic would continue, the road closure option would not correct the deficiencies in the roadway, would not improve stormwater management and would not increase public safety. For these reasons, this No Action option would not satisfy the stated purpose and need of the project.

Feasibility and Prudence Test. The Section 4(f) use of the Soapstone Creek Culvert would involve demolition of the culvert. This Section 4(f) use applies to all three Candidate Build Alternatives.

The potential avoidance alternative, the No Action Alternative, was evaluated in terms of feasibility and prudence in meeting the Purpose and Need of the Project and still avoiding the Section 4(f) use of the Soapstone Creek Culvert. The No Action Alternative does not address the project's purpose and need and would not correct the deficiencies in the roadway, improve stormwater management and increase public safety. Implementation of the No Action Alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need and would result in unacceptable safety or operational problems; therefore, the No Action Alternative is not considered a prudent alternative to avoid the Section 4(f) use of the Soapstone Creek Culvert.

Remaining Candidate Build Alternatives. Candidate Build Alternatives 2, 3, and 4 remain as the only alternatives that would address the purpose and need, but would still result in the Section 4(f) use of the Soapstone Creek Culvert.

All three Candidate Build Alternatives require the demolition and replacement of the Soapstone Creek Culvert, considered individually eligible and also as a contributing element to the

RCPHD, in order to address the stormwater management deficiencies identified in the Purpose and Need (Section 1.2). Any alternative that does not include the demolition and replacement of Soapstone Creek Culvert would compromise the project to the degree that it is unreasonable to proceed.

All three Candidate Build Alternatives represent appropriate engineering designs that will correct the structural deficiencies in the roadway and improve stormwater management; therefore these alternatives are considered feasible. All three alternatives will improve safety and operational problems on Broad Branch Road, will not result in additional construction, maintenance, or operational costs of extraordinary magnitude, will not cause other unique problems or unusual factors, or create cumulative impacts of extraordinary magnitude. After mitigation measures are implemented to alleviate impacts to resources identified in the EA, these alternatives will not create additional social, economic, or environmental impacts; will not disrupt established communities; will not result in disproportionate impacts to minorities or low income populations; and will not create additional impacts to environmental resources protected under Federal statutes. All three Candidate Build Alternatives are considered prudent. Therefore, there is no feasible and prudent alternative to the Section 4(f) use of the Soapstone Creek Culvert.

LEAST HARM

There is no feasible and prudent alternative that avoids the Section 4(f) use of the Soapstone Creek Culvert as well as the other three Section 4(f) properties. Therefore, it must then be determined which of the three remaining Build Alternatives (Alternatives 2, 3 and 4) would cause the least harm based on seven factors identified in 23 CFR 774.3(c)(1). Also noted in Section 4.12.1.4 is that only the alternative that causes the least overall harm may be approved. If two or more alternatives are substantially equal in terms of harm to Section 4(f) property(ies), any one of these alternatives may be selected.

The Soapstone Creek Culvert is one of four Section 4(f) properties affected by the project, and each of them was evaluated separately in terms of the factors that determine a least harm alternative. The four Section 4(f) properties were then evaluated as a group to determine which alternative has the least overall harm with regards to all four properties.

The analysis considered proposed mitigation measures and the severity and location of the Section 4(f) use among the three Candidate Build Alternatives. The Soapstone Creek Culvert is an historic property and in addition to Section 4(f), is protected under Section 106. The Section 106 consultation process is ongoing and the resolution of this process would indicate which of the three remaining alternatives would result in the least harm to contributing elements of the RCPHD in terms of the seven factors listed in 23 CFR 774.3(c)(1). Any conclusions regarding the application of these seven factors cannot be made until the Section 106 process is completed or when the MOA is signed.

Factor 1: The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property). Alternatives 2, 3, and 4 would all result in the demolition and replacement of the Soapstone Creek Culvert. A Determination of Adverse

Effect on Historic Properties in accordance with Section 106 would be recommended, and therefore, a MOA would be prepared, which would resolve the adverse effect from the demolition of the Soapstone Creek Culvert. Upon completion of the Section 106 process, the mitigation measures identified in the MOA would provide information on which of the three Candidate Build Alternatives in terms of Factor 1 would result in the least harm to the Soapstone Creek Culvert.

Factor 2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection. As noted above, each of the Candidate Build Alternatives would result in the demolition and replacement of the Soapstone Creek Culvert to meet the purpose and need of the project. Upon demolition of the Soapstone Creek Culvert, the attributes and features that qualify it as an historic property would no longer exist.

Regardless of the Build Alternatives selected, mitigation measures as defined in the MOA would be implemented, which may lessen the severity of the harm to the resource. All three Candidate Build Alternatives require the demolition and replacement of the Soapstone Creek Culvert; therefore, the severity of harm to the resource is the same for all Candidate Build Alternatives and none of the alternatives result in least harm.

Factor 3: The relative significance of each Section 4(f) property. The Soapstone Creek Culvert is among three other Section 4(f) properties that would be affected by the project, regardless of the Candidate Build Alternatives selected. Its relative significance in comparison to the other three Section 4(f) properties is addressed in the overall determination of least harm.

Factor 4: The views of the official(s) with jurisdiction over each Section 4(f) property. The officials with jurisdiction over the Soapstone Creek Culvert are the DC State Historic Preservation Officer (DC SHPO) and the National Park Service (NPS). DDOT has determined that contributing elements of the RCPHD need to be demolished and replace to correct deficiencies in the roadway, improve stormwater management and increase public safety on Broad Branch Road. To date, the DC SHPO has not stated a preference for an alternative, but is anticipated to concur with the Determination of Adverse Effect. The Section 106 effect determination and DC SHPO concurrence will be documented in the final Section 4(f) evaluation regarding Build Alternatives. All three Candidate Build Alternatives require the demolition and replacement of the Soapstone Creek Culvert; therefore, the severity of harm to the resource is the same for all Candidate Build Alternatives and none of the alternatives result in least harm.

Factor 5: The degree to which each alternative meets the purpose and need for the project. The two primary factors of the purpose and need of the project, to resolve deficiencies in the existing roadway infrastructure and stormwater management, are met by all three Candidate Build Alternatives. Candidate Build Alternatives 3 and 4 provide additional improvements to address other factors of the purpose and need: improve the safety of motorists, pedestrians, and bicyclists; and provide linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems. Upon completion and regardless of the Build

Alternative, the demolition and replacement of the Soapstone Creek Culvert would correct the structural deficiencies of Broad Branch Road and improve stormwater management.

Factor 6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f). Impacts have been identified to land areas beyond the existing roadway infrastructure, for in-stream work in Broad Branch, and removal of vegetation. Additional disturbance beyond the existing roadway ranges from 3.2 acres for Alternative 2 to approximately 5 acres for Alternative 4. Erosion and Sedimentation Control and Stormwater Management Plans will be developed in accordance with DC Municipal Regulations to minimize off-site impacts. In-stream work will require permits with the USACE and DDOE in accordance with Sections 402 and 404 of the Clean Water Act. Impacts to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers. When construction is completed, and the rehabilitated Broad Branch Road becomes fully operational, the project area (including both Section 4(f) and non-Section 4(f) resources) would revert back to the environmental conditions that existed prior to construction. The Project is essentially rebuilding existing transportation infrastructure. Therefore, in terms of Factor 6, the Candidate Build Alternatives appear to be equal.

Factor 7: Substantial differences in costs among the alternatives. The estimated cost of the Candidate Build Alternatives ranges from $29 million to $37.1 million. The difference in costs are appreciable (approximately 28 percent between highest and lowest) and they would be considered substantial for purposes of Section 4(f). Candidate Build Alternative 2 would cost approximately $29 million. Candidate Build Alternative 3 would cost approximately $34.2 million. Candidate Build Alternative 4 would cost approximately $37.1 million. Candidate Build Alternative 2 is the least costly.

PLANNING AND MEASURES TO MINIMIZE HARM

The Soapstone Creek Culvert qualifies as a Section 4(f) property because it is also an historic property. An historic property is any district, site, building, structure or object that is on or eligible for listing on the National Register of Historic Places. NHPA Section 106 requires federal agencies, such as FHWA, to take into account the effects of their undertakings or actions on historic properties. The federal approvals needed to allow the project to proceed are considered as federal undertakings or actions.

The Section 106 process requires that the federal agency first determine whether the undertaking could affect historic properties. If so, the federal agency must consult with the DC SHPO and others, which may involve the public and consulting parties (those with a particular interest in historic preservation). If not, federal agency would have no further Section 106 obligations with respect to the undertaking by submitting a "no historic properties affected" determination. If historic properties are affected, the federal agency would submit either an "adverse effect" or "no adverse effect" determination.

The Section 106 process for the project was formally initiated on August 16, 2011. The Section 106 process for the Project is ongoing. A Determination of Adverse Effect will be recommended for the Project because of the demolition and replacement of the individually NRHP-eligible Soapstone Creek Culvert. The results of the Section 106 consultations for the Project will provide information on the Section 4(f) evaluation by:

- Obtaining the views of the DC SHPO and NPS, the officials with jurisdiction over the Soapstone Creek Culvert;
- Identifying the measures to minimize harm that could preserve the historic activities, features, or attributes of the Soapstone Creek Culvert in consultation with the DC SHPO and NPS in accordance with the consultation process under 36 CFR part 800; and
- Understanding whether the measures to minimize harm to the Soapstone Creek Culvert would result in any impacts or benefits to the surrounding community or environmental resources outside of the Broad Branch Road corridor.

Regardless of the Candidate Build Alternative, mitigation measures to address the adverse effects to the Soapstone Creek Culvert would be outlined in the MOA prepared in accordance with Section 106. The MOA mitigation measures specifically on the Soapstone Creek Culvert would be subject to input from the DC SHPO, NPS, and the consulting parties, and the final version would be signed at a minimum by the FHWA and DC SHPO.

The project's complete Section 106 consultation process, which will provide information to the Section 4(f) evaluation regarding the minimization of harm to the Soapstone Creek Culvert, will be fully disclosed in the final NEPA document. The Final Section 4(f) Evaluation will be based upon the conclusion of the Section 106 consultation.

GATEHOUSE AT LA VILLA FIRENZE

AVOIDANCE ALTERNATIVES

Avoidance Alternatives Considered. The primary intent of Section 4(f) is to avoid the use of or impacts to protected resources. The No Action Alternative is the only alternative that can completely avoid the use of features associated with the Gatehouse at La Villa Firenze within the project area.

The No Action Alternative would include short-term minor restoration activities (safety and routine maintenance) that would maintain the continuing operation of the existing roadway. The No Action Alternative would avoid any use of features associated with the Gatehouse at La Villa Firenze. However, this alternative would not meet the established purpose and needs for the project. Routine maintenance of the existing roadway would not correct the deficiencies in the existing roadway infrastructure and stormwater management system; provide for increased safety of motorists, pedestrians, and bicyclists; and establish linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems (i.e., Rock Creek Park Trail and Soapstone Valley Trail).

Under the No Action Alternative, Broad Branch Road could also be completely closed to all vehicular and bicycle traffic, and, therefore, would avoid any use of features associated with the

Gatehouse at La Villa Firenze. However, this option would prevent local traffic flow through along the west side of Rock Creek Park, and prohibit access to alleyways and private driveways to local residents and the Italian Ambassador. Although pedestrian traffic would continue, the road closure option would not correct the deficiencies in the roadway, would not improve stormwater management and would not increase public safety. For these reasons, neither of the No Action options would satisfy the stated purpose and need of the project.

Feasibility and Prudence Test. The Section 4(f) use of features associated with the Gatehouse at La Villa Firenze would involve demolition of original stone retaining walls at the entrance to the driveway to the Gatehouse, although a small portion of the walls occurs in DDOT right-of-way. This Section 4(f) use applies to all three Candidate Build Alternatives.

The potential avoidance alternative, the No Action Alternative, was evaluated in terms of feasibility and prudence in meeting the Purpose and Need of the Project and still avoiding the Section 4(f) use of features associated with the Gatehouse at La Villa Firenze. The No Action Alternative does not address the Project's Purpose and Need and would not correct the deficiencies in the roadway, improve stormwater management and increase public safety. Implementation of the No Action Alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need and would result in unacceptable safety or operational problems; therefore, the No Action Alternative is not considered a prudent alternative to avoid the Section 4(f) use of features associated with the Gatehouse at La Villa Firenze.

Remaining Candidate Build Alternatives. Candidate Build Alternatives 2, 3, and 4 remain as the only alternatives that would address the Purpose and Need, but would still result in the Section 4(f) use of features associated with the Gatehouse at La Villa Firenze. All three Candidate Build Alternatives represent appropriate engineering designs that will correct the structural deficiencies in the roadway and improve stormwater management; therefore these alternatives are considered feasible. All three alternatives will improve safety and operational problems on Broad Branch Road, will not result in additional construction, maintenance, or operational costs of extraordinary magnitude, will not cause other unique problems or unusual factors, or create cumulative impacts of extraordinary magnitude. After mitigation measures are implemented to alleviate impacts to resources identified in the EA, these alternatives will not create additional social, economic, or environmental impacts; will not disrupt established communities; will not result in disproportionate impacts to minorities or low income populations; and will not create additional impacts to environmental resources protected under Federal statutes. All three Candidate Build Alternatives are considered prudent. Therefore, there is no feasible and prudent alternative to the Section 4(f) use of features associated with the Gatehouse at La Villa Firenze.

LEAST HARM

There is no feasible and prudent alternative that avoids the Section 4(f) use features associated with the Gatehouse at La Villa Firenze as well as the other three Section 4(f) properties. Therefore, it must then be determined which of the three remaining Candidate Build Alternatives (Alternatives 2, 3 and 4) would cause the least harm based on seven factors identified in 23 CFR 774.3(c)(1). Also noted in Section 4.12.1.4 is that only the alternative that

causes the least overall harm may be approved. If two or more alternatives are substantially equal in terms of harm to Section 4(f) property(ies), any one of these alternatives may be selected.

The Gatehouse at La Villa Firenze is one of four Section 4(f) properties affected by the project, and each of them was evaluated separately in terms of the factors that determine a least harm alternative. The four Section 4(f) properties were then evaluated as a group to determine which alternative has the least overall harm with regards to all four properties.

The analysis considered proposed mitigation measures and the severity and location of the Section 4(f) use among the three Candidate Build Alternatives. The Gatehouse at La Villa Firenze is an historic property and in addition to Section 4(f), is protected under Section 106. The Section 106 consultation process is ongoing and the resolution of this process would indicate which of the three remaining alternatives would result in the least harm to contributing elements of the RCPHD in terms of the seven factors listed in 23 CFR 774.3(c)(1). Any conclusions regarding the application of these seven factors cannot be made until the Section 106 process is completed or when the MOA is signed.

Factor 1: The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property). Alternatives 2, 3, and 4 would all result in the demolition and replacement of features associated with the Gatehouse at La Villa Firenze (i.e. retaining walls). A Determination of Adverse Effect on Historic Properties in accordance with Section 106 would be recommended, and therefore, a MOA would be prepared, which would resolve the adverse effect from the demolition of the retaining walls. Upon completion of the Section 106 process, the mitigation measures identified in the MOA would provide information on which of the three Candidate Build Alternatives in terms of Factor 1 would result in the least harm to features associated with the Gatehouse at La Villa Firenze.

Factor 2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection. As noted above, each of the Candidate Build Alternatives would result in the demolition and replacement of features associated with the Gatehouse at La Villa Firenze to meet the purpose and need of the project. Although features (retaining walls) associated with the Gatehouse at La Villa Firenze would be demolished and replaced, loss of these features would not diminish the overall characteristics that define NRHP eligibility of Gatehouse at La Villa Firenze.

Regardless of the Candidate Build Alternatives selected, mitigation measures as defined in the MOA would be implemented, which may lessen the severity of the harm to the resource. Similar to what is noted under Factor 1, the conclusion of the Section 106 consultation process would provide information on which of the three Build Alternatives in terms of Factor 2 would result in the least harm to features associated with the Gatehouse at La Villa Firenze.

Factor 3: The relative significance of each Section 4(f) property. The Gatehouse at La Villa Firenze is among three other Section 4(f) properties that would be affected by the project, regardless of the Candidate Build Alternatives selected. Its relative significance in comparison to the other three Section 4(f) properties is addressed in the overall determination of least harm.

Factor 4: The views of the official(s) with jurisdiction over each Section 4(f) property. The official with jurisdiction over features associated with the Gatehouse at La Villa Firenze is the DC State Historic Preservation Officer (DC SHPO). DDOT has determined that features associated with the Gatehouse at La Villa Firenze need to be demolished and replace to correct deficiencies in the roadway, improve stormwater management and increase public safety on Broad Branch Road. To date, the DC SHPO has not stated a preference for an alternative, but is anticipated to concur with the Determination of Adverse Effect. The Section 106 effect determination and DC SHPO concurrence will be documented in the final Section 4(f) evaluation regarding Build Alternatives. The conclusion of the Section 106 consultation process may provide information on which of the three Build Alternatives in terms of Factor 4 would result in the least harm to features associated with the Gatehouse at La Villa Firenze.

Factor 5: The degree to which each alternative meets the purpose and need for the project. The two primary factors of the purpose and need of the project, to resolve deficiencies in the existing roadway infrastructure and stormwater management, are met by all three Candidate Build Alternatives. Candidate Build Alternatives 3 and 4 provide additional improvements to address other factors of the purpose and need: improve the safety of motorists, pedestrians, and bicyclists; and provide linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems. Upon completion and regardless of the Build Alternative, the demolition and replacement of features associated with the Gatehouse at La Villa Firenze (retaining walls) would correct the structural deficiencies of Broad Branch Road and improve stormwater management.

Factor 6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f). Impacts have been identified to land areas beyond the existing roadway infrastructure, for in-stream work in Broad Branch, and removal of vegetation. Additional disturbance beyond the existing roadway ranges from 3.2 acres for Alternative 2 to approximately 5 acres for Alternative 4. Erosion and Sedimentation Control and Stormwater Management Plans will be developed in accordance with DC Municipal Regulations to minimize off-site impacts. In-stream work will require permits with the USACE and DDOE in accordance with Sections 402 and 404 of the Clean Water Act. Impacts to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers. When construction is completed, and the rehabilitated Broad Branch Road becomes fully operational, the project area (including both Section 4(f) and non-Section 4(f) resources) would revert back to the environmental conditions that existed prior to construction. The Project is essentially rebuilding existing transportation infrastructure. Therefore, in terms of Factor 6, the Candidate Build Alternatives appear to be equal.

Factor 7: Substantial differences in costs among the alternatives. The estimated cost of the Candidate Build Alternatives ranges from $29 million to $37.1 million. The difference in costs are appreciable (approximately 28 percent between highest and lowest) and they would be considered substantial for purposes of Section 4(f). Candidate Build Alternative 2 would cost approximately $29 million. Candidate Build Alternative 3 would cost approximately $34.2

million. Candidate Build Alternative 4 would cost approximately $37.1 million. Candidate Build Alternative 2 is the least costly.

PLANNING AND MEASURES TO MINIMIZE HARM

The Gatehouse at La Villa Firenze qualifies as a Section 4(f) property because it is also an historic property. An historic property is any district, site, building, structure or object that is on or eligible for listing on the National Register of Historic Places. NHPA Section 106 requires federal agencies, such as FHWA, to take into account the effects of their undertakings or actions on historic properties. The federal approvals needed to allow the Project to proceed are considered as federal undertakings or actions.

The Section 106 process requires that the federal agency first determine whether the undertaking could affect historic properties. If so, the federal agency must consult with the DC SHPO and others, which may involve the public and consulting parties (those with a particular interest in historic preservation). If not, federal agency would have no further Section 106 obligations with respect to the undertaking by submitting a "no historic properties affected" determination. If historic properties are affected, the federal agency would submit either an "adverse effect" or "no adverse effect" determination.

The Section 106 process for the Project was formally initiated on August 16, 2011. The Section 106 process for the Project is ongoing. A Determination of Adverse Effect will be recommended for the Project because of demolition and replacement of features (original stone retaining walls) associated with the NRHP-eligible gatehouse at La Villa Firenze. The results of the Section 106 consultations for the Project will provide information on the Section 4(f) evaluation by:

- Obtaining the views of the DC SHPO, the official with jurisdiction over the Gatehouse at La Villa Firenze;
- Identifying the measures to minimize harm that could preserve the historic activities, features, or attributes of the features associated with the Gatehouse at La Villa Firenze in consultation with the DC SHPO and the Government of Italy in accordance with the consultation process under 36 CFR part 800; and
- Understanding whether the measures to minimize harm to features associated with the Gatehouse at La Villa Firenze would result in any impacts or benefits to the surrounding community or environmental resources outside of the Broad Branch Road corridor.

Regardless of the Candidate Build Alternative, mitigation measures to address the adverse effects to the features associated with the Gatehouse at La Villa Firenze would be outlined in the MOA prepared in accordance with Section 106. The MOA mitigation measures specifically on the features associated with the Gatehouse at La Villa Firenze would be subject to input from the DC SHPO, the Government of Italy, and the consulting parties, and the final version would be signed at a minimum by the FHWA and DC SHPO.

The Project's complete Section 106 consultation process, which will provide information to the Section 4(f) evaluation regarding the minimization of harm to the features associated with the

Gatehouse at La Villa Firenze, will be fully disclosed in the final NEPA document. The Final Section 4(f) Evaluation will be based upon the conclusion of the Section 106 consultation.

ROCK CREEK PARK

AVOIDANCE ALTERNATIVES

Avoidance Alternatives Considered. The primary intent of Section 4(f) is to avoid the use of or impacts to protected resources. The No Action Alternative is the only alternative that can completely avoid any new use of Rock Creek Park within the project area.

The existing roadway is located within DDOT right-of-way, with minor exceptions. These exceptions occur in six short sections along the project corridor where the existing roadway was constructed outside DDOT-owned property. These small areas account to a total area of 923 square feet. All but one location are located on the east side of the roadway where the northbound lane encroaches on NPS-owned property in Rock Creek Park. The location of the roadway, outside of the DDOT-owned right-of-way, may be due to inconsistencies in survey bounds that existed when the current Broad Branch Road was constructed or may be the result of previous repaving projects.

The No Action Alternative would include short-term minor restoration activities (safety and routine maintenance) that would maintain the continuing operation of the existing roadway. The No Action Alternative would avoid any new use of Rock Creek Park. However, this alternative would not meet the established purpose and needs for the project. Routine maintenance of the existing roadway would not correct the deficiencies in the existing roadway infrastructure and stormwater management system; provide for increased safety of motorists, pedestrians, and bicyclists; and establish linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems (i.e., Rock Creek Park Trail and Soapstone Valley Trail).

Under the No Action Alternative, Broad Branch Road could also be completely closed to all vehicular and bicycle traffic, and, therefore, would avoid any new use of Rock Creek Park. However, this option would prevent local traffic flow through along the west side of Rock Creek Park, and prohibit access to alleyways and private driveways to local residents. Although pedestrian traffic would continue, the road closure option would not correct the deficiencies in the roadway, would not improve stormwater management and would not increase public safety. For these reasons, neither of the No Action options would satisfy the stated purpose and need of the project.

Feasibility and Prudence Test. The Section 4(f) use of Rock Creek Park would involve permanent use of parklands for cut and fill activities for the road bed, acquisition of additional right-of-way for road, and sidewalk construction. This Section 4(f) use applies to all three Candidate Build Alternatives and Option B.

The potential avoidance alternative, the No Action Alternative, was evaluated in terms of feasibility and prudence in meeting the Purpose and Need of the Project and still avoiding the Section 4(f) use of Rock Creek Park. The No Action Alternative does not address the Project's

Purpose and Need and would not correct the deficiencies in the roadway, improve stormwater management and increase public safety. Implementation of the No Action Alternative would compromise the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need and would result in unacceptable safety or operational problems; therefore, the No Action Alternative is not considered a prudent alternative to avoid the Section 4(f) use of Rock Creek Park.

Remaining Candidate Build Alternatives. Candidate Build Alternatives 2, 3, and 4 remain as the only alternatives that would address the purpose and need, but would still result in the Section 4(f) use of Rock Creek Park. Permanent use of Rock Creek Park would increase with each Candidate Build Alternative. Construction of Alternative 2 would result in the permanent use of 91 square feet of Rock Creek Park based on cut and fill activities for the new road bed. Under Alternative 3, permanent use of 2,082 square feet of Rock Creek Park would occur for cut and fill activities for the road bed, acquisition of additional right-of-way for road, and sidewalk construction. Construction of Alternative 4 would result in permanent use of 8,206 square feet of Rock Creek Park based on cut and fill activities for the road bed, acquisition of additional for road, and sidewalk construction. Permanent use of 2,898 square feet of Rock Creek Park will be required for the installation of the sidewalk in Option B. This Section 4(f) use applies to all three Candidate Build Alternatives and Option B.

All three Candidate Build Alternatives represent appropriate engineering designs that will correct the structural deficiencies in the roadway and improve stormwater management; therefore these alternatives are considered feasible. All three alternatives will improve safety and operational problems on Broad Branch Road, will not result in additional construction, maintenance, or operational costs of extraordinary magnitude, will not cause other unique problems or unusual factors, or create cumulative impacts of extraordinary magnitude. After mitigation measures are implemented to alleviate impacts to resources identified in the EA, these alternatives will not create additional social, economic, or environmental impacts; will not disrupt established communities; will not result in disproportionate impacts to minorities or low income populations; and will not create additional impacts to environmental resources protected under Federal statutes. All three Candidate Build Alternatives are considered prudent. Therefore, there is no feasible and prudent alternative to the Section 4(f) use of Rock Creek Park.

LEAST HARM

There is no feasible and prudent alternative that avoids the Section 4(f) use of the Rock Creek Park as well as the other three Section 4(f) properties. Therefore, it must then be determined which of the three remaining Build Alternatives (Alternatives 2, 3 and 4) would cause the least harm based on seven factors identified in 23 CFR 774.3(c)(1). Also noted in Section 4.12.1.4 is that only the alternative that causes the least overall harm may be approved. If two or more alternatives are substantially equal in terms of harm to Section 4(f) property(ies), any one of these alternatives may be selected.

The Rock Creek Park is one of four Section 4(f) properties affected by the Project, and each of them was evaluated separately in terms of the factors that determine a least harm alternative.

The four Section 4(f) properties were then evaluated as a group to determine which alternative has the least overall harm with regards to all four properties. The analysis considered proposed mitigation measures and the severity and location of the Section 4(f) use among the three Candidate Build Alternatives.

Factor 1: The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property). Alternatives 2, 3, and 4 would all result permanent use of Rock Creek Park. Construction of Alternative 2 would result in the permanent use of 91 square feet of Rock Creek Park based on cut and fill activities for the new road bed. Under Alternative 3, permanent use of 2,082 square feet of Rock Creek Park would occur for cut and fill activities for the road bed, acquisition of additional right-of-way for road, and sidewalk construction. Construction of Alternative 4 would result in permanent use of 8,206 square feet of Rock Creek Park based on cut and fill activities for the road bed, acquisition of additional for road, and sidewalk construction. Permanent use of 2,898 square feet of Rock Creek Park will be required for the installation of the sidewalk in Option B.

Temporary use of Rock Creek Park will be required for the excavation and replacement of stormwater outfall pipes under each Candidate Build Alternative; however, the ground surface would be restored to its original elevation and re-vegetated as appropriate.

Beneficial impacts to Rock Creek Park from Alternative 2 with Option B, and Alternatives 3 and 4 would be the improved linkages between two NPS park resources (Rock Creek Park and Soapstone Valley Park). Alternatives 3 and 4 would also provide for safer access to park resources by the addition of non-motorized facilities. In addition to sidewalks, Alternatives 3 and 4 will include crosswalks which would allow for safer access to the existing multi-use trail and park facilities than provided by existing facilities.

Factor 2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection. As noted above, each of the Build Alternatives would result in the permanent use of Rock Creek Park. Coordination with NPS and the Commission of Fine Arts (CFA) to determine measures to minimize harm to Rock Creek Park is ongoing.

Factor 3: The relative significance of each Section 4(f) property. The Rock Creek Park is among three other Section 4(f) properties that would be affected by the Project, regardless of the Build Alternatives selected. Its relative significance in comparison to the other three Section 4(f) properties is addressed in the overall determination of least harm.

Factor 4: The views of the official(s) with jurisdiction over each Section 4(f) property. The official with jurisdiction over Rock Creek Park is the NPS. DDOT has determined that additional right-of-way from Rock Creek Park is required to correct deficiencies in the roadway, improve stormwater management and increase public safety on Broad Branch Road.

Factor 5: The degree to which each alternative meets the purpose and need for the project. The two primary factors of the purpose and need of the project, to resolve deficiencies in the existing roadway infrastructure and stormwater management, are met by all three Candidate

Build Alternatives. Candidate Build Alternatives 3 and 4 provide additional improvements to address other factors of the purpose and need: improve the safety of motorists, pedestrians, and bicyclists; and provide linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems. Upon completion and regardless of the Build Alternative, the acquisition of additional right-of-way from Rock Creek Park would correct the structural deficiencies of Broad Branch Road and improve stormwater management.

Factor 6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f). Impacts have been identified to land areas beyond the existing roadway infrastructure, for in-stream work in Broad Branch, and removal of vegetation. Additional disturbance beyond the existing roadway ranges from 3.2 acres for Alternative 2 to approximately 5 acres for Alternative 4. Erosion and Sedimentation Control and Stormwater Management Plans will be developed in accordance with DC Municipal Regulations to minimize off-site impacts. In-stream work will require permits with the USACE and DDOE in accordance with Sections 402 and 404 of the Clean Water Act. Impacts to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers. When construction is completed, and the rehabilitated Broad Branch Road becomes fully operational, the project area (including both Section 4(f) and non-Section 4(f) resources) would revert back to the environmental conditions that existed prior to construction. The project is essentially rebuilding existing transportation infrastructure. Therefore, in terms of Factor 6, the Build Alternatives appear to be equal.

Factor 7: Substantial differences in costs among the alternatives. The estimated cost of the Candidate Build Alternatives ranges from $29 million to $37.1 million. The difference in costs are appreciable (approximately 28 percent between highest and lowest) and they would be considered substantial for purposes of Section 4(f). Candidate Build Alternative 2 would cost approximately $29 million. Candidate Build Alternative 3 would cost approximately $34.2 million. Candidate Build Alternative 4 would cost approximately $37.1 million. Candidate Build Alternative 2 is the least costly.

PLANNING AND MEASURES TO MINIMIZE HARM

To initiate discussion to determine measures to minimize harm to Rock Creek Park, coordination with NPS has been conducted throughout the NEPA process. This included NPS's role as a cooperating agency and NPS participation in agencies meetings held to date to discuss the approvals needed to allow construction. At the conclusion of construction, the Project would restore Rock Creek Park to its reconstruction conditions. In addition, the Project would commit to providing enhancements and upgraded amenities to Rock Creek Park in coordination with the NPS and CFA.

4.12.1.10 Least Harm Analysis to Section 4(f) Properties

As previously described, there is no feasible and prudent alternative that avoids the Section 4(f) use of contributing elements of RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, features associated with the Gatehouse at La Villa Firenze, and Rock

Creek Park. Alternatives 2, 3, and 4 are the only Candidate Build Alternatives that would address the project's purpose and need, but would still result in the Section 4(f) use of these properties.

This section is based on regulations contained in 23 CFR 774.3(c)(1). The analysis of least overall harm compared the Build Alternatives based on the seven factors contained in this part of the Section 4(f) regulations, which are discussed above. Only the alternative that causes the least overall harm to all affected Section 4(f) properties may be approved. If two or more alternatives are substantially equal in terms of harm to the 4(f) property(ies), any one of these alternatives may be selected.

The analysis considered proposed mitigation measures and the severity and location of the Section 4(f) use, and the results are provided below. Three of the four Section 4(f) properties are also historic properties protected under Section 106. The fourth property, Rock Creek Park, qualifies as a Section 4(f) property because it is a publicly-owned, public park. The Section 106 consultation process is ongoing and the resolution of this process would provide information which of the three remaining Build Alternatives would result in the least overall harm to the four Section 4(f) properties in terms of the seven factors listed in 23 CFR 774.3(c)(1). Any conclusions regarding the application of these seven factors cannot be made until the Section 106 process is completed or when the MOA is signed.

ANALYSIS

Factor 1: The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property). Alternatives 2, 3, and 4 would all result in demolition and replacement of contributing elements of RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, features associated with the Gatehouse at La Villa Firenze. In accordance with Section 106, a Determination of Adverse Effect on Historic Properties would be recommended, and therefore, a MOA will be prepared by FHWA and DDOT in consultation with consulting parties to resolve and mitigate the adverse effects to historic properties in accordance with Section 106 of the NHPA.

As noted above, each of the Candidate Build Alternatives would result in the permanent use of Rock Creek Park. Coordination with NPS and CFA to determine measures to minimize harm to Rock Creek Park is ongoing. Beneficial impacts to Rock Creek Park from Alternative 2 with Option B, and Alternatives 3 and 4 would be the improved linkages between two NPS park resources (Rock Creek Park and Soapstone Valley Park). Alternatives 3 and 4 would also provide for safer access to park resources by the addition of non-motorized facilities. In addition to sidewalks, Alternatives 3 and 4 will include crosswalks which would allow for safer access to the existing multi-use trail and park facilities than provided by existing facilities.

Factor 2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection. Each of the Candidate Build Alternatives would have very similar impacts on the four protected Section 4(f) resources. For example, all three Candidate Build Alternatives require demolition and replacement of the Soapstone Creek Culvert to meet the Purpose and Need of the Project. Upon

demolition of the culvert, the attributes and features that qualify it for protection would no longer exist. Regardless of the Candidate Build Alternative selected, mitigation measures as defined in the MOA would be implemented, which may lessen the severity of the harm to the resource.

Alternatives 2, 3, and 4 would all result in permanent use of Rock Creek Park with implementation of Alternative 2 resulting in the smallest amount of permanent use (91 square feet based on cut and fill activities for the new road bed) and Alternative 4 resulting in the largest amount permanent use (8,206 square feet based on cut and fill activities for the road bed, acquisition of additional for road, and sidewalk construction).

Factor 3: The relative significance of each Section 4(f) property. The parties with jurisdictional authority over the Section 4(f) properties, which includes DC SHPO and NPS and may be inclusive of the consulting parties (such as the Government of Italy), may determine the relative significance of each of those properties in comparison to one another. This may factor in the determination of the alternative with the least overall harm to the affected Section 4(f) properties.

Factor 4: The views of the official(s) with jurisdiction over each Section 4(f) property. Agencies or organizations with jurisdiction over the four affected Section 4(f) resources include the DC SHPO and NPS. Because the NEPA process is still ongoing, none of these organizations have stated a preference for an alternative. DDOT has determined that demolition and replacement of contributing elements of RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, and features associated with the Gatehouse at La Villa Firenze represent appropriate engineering designs that will correct the structural deficiencies in the roadway and improve stormwater management on Broad Branch Road. The DC SHPO is anticipated to concur with the upcoming Determination of Adverse Effect. The Section 106 effect determination and DC SHPO concurrence will be documented in the final Section 4(f) evaluation regarding Candidate Build Alternatives. Any views these organizations provide will be documented in the Final Section 4(f) evaluation and will factor in the determination of the alternative with the least overall harm to the affected Section 4(f) resources.

Factor 5: The degree to which each alternative meets the purpose and need for the project. The two primary factors of the purpose and need of the project, to resolve deficiencies in the existing roadway infrastructure and stormwater management, are met by all three Candidate Build Alternatives. Candidate Build Alternatives 3 and 4 provide additional improvements to address other factors of the purpose and need: improve the safety of motorists, pedestrians, and bicyclists; and provide linkages to serve pedestrian and bicycle travel along the roadway itself as well as to the Rock Creek Park trail systems.

Factor 6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f). Impacts have been identified to land areas beyond the existing roadway infrastructure, for in-stream work in Broad Branch, and removal of vegetation. Additional disturbance beyond the existing roadway ranges from 3.2 acres for Alternative 2 to approximately 5 acres for Alternative 4. Erosion and Sedimentation Control and Stormwater Management Plans will be developed in accordance with DC Municipal Regulations to

minimize off-site impacts. In-stream work will require permits with the USACE and DDOE in accordance with Sections 402 and 404 of the Clean Water Act. Impacts to trees will be avoided to the maximum extent possible by minimizing cut/fill/pavement within the root zone. All trees will be protected during construction or replaced according to DDOT's Bluebook for Standard Specifications for Highways and Structures - Section 611 Trees, Shrubs, Vines, and Ground Covers. When construction is completed, and the rehabilitated Broad Branch Road becomes fully operational, the project area (including both Section 4(f) and non-Section 4(f) resources) would revert back to the environmental conditions that existed prior to construction. The project is essentially rebuilding existing transportation infrastructure.

Factor 7: Substantial differences in costs among the alternatives. The estimated cost of the Candidate Build Alternatives ranges from $29 million to $37.1 million. The difference in costs are appreciable (approximately 28 percent between highest and lowest) and they would be considered substantial for purposes of Section 4(f). Candidate Build Alternative 2 would cost approximately $29 million. Candidate Build Alternative 3 would cost approximately $34.2 million. Candidate Build Alternative 4 is the highest and would cost approximately $37.1 million.

PRELIMINARY CONCLUSION

There is no feasible and prudent alternative that avoids the Section 4(f) use of contributing elements of RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, features associated with the Gatehouse at La Villa Firenze, and Rock Creek Park, and Alternatives 2, 3 and 4 remain as the only Build Alternatives that would address the project's purpose and need, but would still result in the Section 4(f) use of these properties. Therefore, in accordance with 23 CFR 774.3, the alternative with the least overall harm to the Section 4(f) properties must be selected. A summary of the Least Harm Analysis by Candidate Build Alternatives and Options is presented in **Table 4-13**.

Least overall harm for this project is measured in terms of permanent construction impacts. In comparing least overall temporary harm attributable to the three Candidate Build Alternatives, there is no clear resolution at this time largely because three of the four Section 4(f) properties are historic properties protected under Section 106. The Section 106 consultation is ongoing, and its conclusion would provide information on the determination of the least overall harm alternative. Specifically, any conclusions under Factors 1 through 4 would depend on the results of the Section 106 consultation. Factors 5 through 7 do not depend on the Section 106 consultation. The Candidate Build Alternatives appear to be equal in terms of Factors 5 and 6. In terms of Factor 7, Alternative 4 would require a substantially higher cost than Alternatives 2 or 3 to build the Project.

The final approval to "use" of the four affected Section 4(f) properties with the resulting determination of the alternative with the least overall harm may be made in the final NEPA decision document.

Table 4-13. Summary – Least Harm Analysis

	ALTERNATIVE 2	OPTION A	OPTION B	ALTERNATIVE 3	ALTERNATIVE 4	OPTION C
NRHP-listed Rock Creek Park Historic District	Demolition of segments of retaining walls and stormwater outfall headwalls	No harm	No harm	Demolition of segments of retaining walls and stormwater outfall headwalls	Demolition of segments of retaining walls and stormwater outfall headwalls	No harm
NRHP-eligible Soapstone Creek Culvert	Demolition of Soapstone Creek culvert	No harm	No harm	Demolition of Soapstone Creek culvert	Demolition of Soapstone Creek culvert	No harm
NRHP-eligible Gatehouse at La Villa Firenze	Demolition of the original stone retaining walls at the entrance to the gatehouse driveway	No harm	No harm	Demolition of the original stone retaining walls at the entrance to the gatehouse driveway	Demolition of the original stone retaining walls at the entrance to the gatehouse driveway	No harm
Rock Creek Park	Permanent use of 91 square feet Temporary use for the excavation and replacement of stormwater outfall pipes; however, the ground surface would be restored to its original elevation and re-vegetated as appropriate	No harm	Permanent use of 2,898 square feet	Permanent use of 2,082 square feet Temporary use for the excavation and replacement of stormwater outfall pipes; however, the ground surface would be restored to its original elevation and re-vegetated as appropriate	Permanent use of 8,206 square feet Temporary use for the excavation and replacement of stormwater outfall pipes; however, the ground surface would be restored to its original elevation and re-vegetated as appropriate	No harm
FHWA Recommendation	Least Harm to Section 4(f) properties because of minimal permanent use of Rock Creek Park	No harm	Harm to Section 4(f) properties because of increased permanent use of Rock Creek Park	Harm to Section 4(f) properties because of increased permanent use of Rock Creek Park	Greatest Harm to Section 4(f) properties because of increased permanent use of Rock Creek Park	No harm

4.12.1.11 Overall Planning and Measures to Minimize Harm

Although the Candidate Build Alternatives will have Section 4(f) uses of contributing elements of the RCPHD (retaining walls and stormwater outfall headwalls), Soapstone Creek Culvert, features associated with the Gatehouse at La Villa Firenze, and Rock Creek Park, all possible planning to minimize harm to historic properties has been investigated. Some minimization measures have already been incorporated into the design of the road and stormwater outfall features; others will be stipulated in the MOA.

Measures to minimize harm incorporated into the project design include:

- Replacement of Soapstone Creek Culvert: Use of context sensitive design and materials; reuse of existing materials as appropriate
- Construction of new retaining and coping walls: Use of context sensitive design and appropriate materials

- Reconstruction of existing historic retaining walls: Use of context sensitive design and materials; reuse of existing materials as appropriate
- Replacement of outfalls: Reconstruction of stone surrounds in portions of the stone retaining walls and stone headwalls; reuse of existing materials as appropriate
- Post-construction activities: re-setting original stone and metal boundary markers considered contributing elements to the RCPHD
- Post-construction activities: Restoration of native tree species and vegetation in Rock Creek Park

4.12.1.12 Agency Coordination

Agency coordination began in 2010, shortly after DDOT initiated the Broad Branch Road Rehabilitation project. Additional agency coordination was undertaken with subsequent planning studies, through which options for Broad Branch Road improvements were developed and evaluated, leading to the development of the alternatives analyzed in this Section 4(f) Evaluation. Agency coordination efforts have continued as part of preparation of the document being prepared pursuant to requirements of the NEPA, which for the Broad Branch Road Rehabilitation project is an Environmental Assessment (EA). A summary of agency coordination efforts for the project relevant to Section 4(f) issues and including Section 106 consultation is presented in Chapter 5.

4.12.1.13 Section 4(f) Conclusion

The proposed action—rehabilitation of Broad Branch Road—will constitute an adverse effect on the RCPHD, the Soapstone Creek Culvert, and the Gatehouse at La Villa Firenze and Section 4(f) uses of contributing elements of the RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, features associated with the Gatehouse at La Villa Firenze, and Rock Creek Park. All three Candidate Build Alternatives require the demolition and replacement of the Soapstone Creek Culvert in order to address the stormwater management deficiencies identified in the Purpose and Need. Any alternative that does not include the demolition and replacement of Soapstone Creek Culvert would compromise the project to the degree that it is unreasonable to proceed. The project purpose and need cannot be met while avoiding Section 4(f) properties. Therefore, there is no prudent and feasible avoidance alternative.

The proposed action includes all possible planning to minimize harm to the Section 4(f) resources through the use of context sensitive design and materials; reuse of existing materials as appropriate; and restoration of native tree species and vegetation in Rock Creek Park. FHWA and DDOT have coordinated with local agencies, NPS, DC SHPO, ACHP, and the consulting parties in the Section 106 process to minimize impacts to contributing elements of the RCPHD (retaining walls and stormwater outfall headwalls), the Soapstone Creek Culvert, and features associated with the Gatehouse at La Villa Firenze and to develop mitigation measures to resolve the adverse effect on these historic properties.

The least harm analysis shows there are substantial differences between the Candidate Build Alternatives. The cost of Candidate Build Alternative 3 is $6.2 million greater than Candidate Build Alternative 2; Candidate Build Alternative 4 is $8.1 million greater than Candidate Build Alternative 2. All three Candidate Build Alternatives meet the two primary factors of the purpose and need, to correct deficiencies in the existing roadway infrastructure and stormwater management system. Candidate Build Alternatives 3 and 4 address other factors of the purpose and need involving increased safety of motorists, pedestrians, and bicyclists; and establishing linkages to serve pedestrian and bicycle travel along the roadway itself as well as linkages into the Rock Creek Park trail systems. A preferred alternative has not yet been selected.

4.12.2 SECTION 6(f)

The Land and Water Conservation Fund (LWCF) Program was established in 1965 by the federal government to expand public, outdoor recreation space. Section 6(f) provides matching funds in the form of grants to states or municipalities for acquisition, planning, or improvements to public outdoor recreation space. Any property in which LWCF money was used is considered a 6(f) resource. In the District of Columbia, the District DPR is the recipient of such funds. A list from NPS of LWCF grants in the DC area does not indicate that any funds were used for projects in the Broad Branch Road project area.

4.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The implementation of the improvements to Broad Branch Road involves a commitment of natural, physical, human, and fiscal resources. Land used in the construction of the improvements is considered an irreversible commitment during the time that the land is used for transportation facilities. Land use within this project area is already used for the roadway and is not anticipated to change from either the maintenance or improvement of this road. If a greater need arises for use of the land or if Broad Branch Road is no longer needed, the land can be converted to another use. At present, there is no reason to believe that such a conversion will ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials, such as cement, aggregate, asphalt, and steel would be expended for the improvements. Additionally, large amounts of labor and natural resources would be used in the fabrication and preparation of construction materials. These materials are generally not retrievable; however, they are not in short supply and their use would not have an adverse impact on the continued availability of these resources. Any construction would also require a substantial one-time expenditure of local, state, and federal funds that are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area and the region would benefit from the improved quality of the transportation system. These benefits would consist of improved infrastructure, including roadway pavement and geometrics, stormwater management, and upgraded structures, and separate facilities for pedestrians and bicycles to improve system linkage for pedestrians and bicyclists to parks, schools, residential areas adjacent to Broad Branch Road, and the NPS multi-use trail system.

5 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

5.1 AGENCY COORDINATION

As part of the planning process for the Broad Branch Road EA, DDOT conducted an agency coordination program. This coordination included project scoping, consultation with resource agencies in accordance with Section 7 of the Endangered Species Act (ESA), consultation with the District of Columbia State Historic Preservation Office (DC SHPO) and NPS in accordance with Section 106 of the National Historic Preservation Act (NHPA), and individual meetings.

AGENCY SCOPING

DDOT and FHWA held an Agency Scoping Meeting on March 24, 2011. Agencies in attendance included NPS, District Department of the Environment (DDOE), and the National Capital Planning Commission (NCPC). The purpose of the meeting was to provide federal and local agencies with an overview of the proposed project as well as solicit their initial thoughts on issues, concerns, and resources within the study area. Early coordination was also conducted with the U.S. Army Corps of Engineers.

AGENCY ALTERNATIVES MEETING

DDOT and FHWA held an Agency Alternatives Meeting on August 25, 2011 to update federal and local agencies on the study's process and to solicit their input for concept improvements / preliminary alternatives. Agencies in attendance included NPS, DDOE, DC Office of Planning (DCOP), NCPC, and the DC State Historic Preservation Office (SHPO). Agency representatives helped construct preliminary alternatives (concepts) by incorporating various improvement elements including roadway segments, bike lanes, sidewalks, and stormwater management facilities (e.g., curb, swales and rain gardens). Concepts developed by agency representatives are illustrated in **Appendix A**. See Section 2.1 for further details on the concept development process.

DC STATE HISTORIC PRESERVATION OFFICE

The Section 106 process of the NHPA was formally initiated with the DC SHPO on February 24, 2011 after an introductory project meeting on December 8, 2010. During the meeting, DC SHPO was provided an overview of the Broad Branch Road project. After the partial collapse of Soapstone Creek Culvert in April 2011, consultation between the two agencies focused primarily on the immediate effects associated with the temporary repair and proposed permanent replacement of the historic structure. DDOT met with the DC SHPO again on June 21, 2011 to refine the Area of Potential Effects (APE) for the Broad Branch Road project area. DDOT and DC SHPO met again on August 16, 2011 to further refine the APE. DDOT submitted a letter formally requesting concurrence with the APE in late August 2011. On September 28,

2011, the DC SHPO approved the revised APE. At this time, the DC SHPO also identified potential historic properties in the APE and requested that DDOT and its consultant complete Determination of Eligibility (DOE) forms for properties that had not been previously evaluated for NRHP eligibility.

In delineating the APE, factors taken into account included the elements of the proposed action; the existence of buildings, vegetation, and terrain; possible visual concerns in terms of changes to viewshed caused by roadway modifications; audible impacts; and construction activities necessary for the proposed action.

DDOT, in consultation with the DC SHPO has defined the APE boundaries as the east bank of Broad Branch between Beach Drive and 27th Street NW; the first row of structures north of Broad Branch Road between 27th Street, NW and Nevada Avenue, NW; several residences south of Broad Branch Road along Linnean Avenue; and the first row of residences west of Broad Branch Road between 27th Street, NW and Beach Drive, NW. This APE is considered sufficient to include all proposed repairs or modifications to Broad Branch Road, to incorporate any possible construction staging areas, to accommodate any modifications and/or replacement of the Soapstone Creek Culvert, and to assess any visual or audible intrusions. DC SHPO approved the APE on September 28, 2011. A map of the APE is provided in **Appendix D**.

On April 18, 2013, FHWA formally initiated consultation under Section 106 of the NHPA with the DC SHPO and requested concurrence with the APE, previously submitted by DDOT for review. Although the FHWA had not made a formal determination of "adverse effect," the agency anticipates that the project will results in an "effect" as a result of reconstruction of the Soapstone Creek Culvert and the project's proximity to Rock Creek Park.

JOINT AGENCY PROGRESS MEETINGS

During the course of project planning and NEPA evaluations, DDOT and FHWA conducted a series of regularly scheduled meetings with the NPS and DDOE to ensure continuous input from these two agencies. Each agency provided extensive information on existing conditions within the project area and helped coordinate the roadway improvement with on-going improvements in Rock Creek Park – most notably stormwater management and proposals to "daylight " (or restore) 1,600 linear feet of an unnamed tributary to Broad Branch at the northern end of the proposed Broad Branch Road rehabilitation project.

On April 26, 2013, representatives from DDOT conducted a site visit of the southern portion of the Broad Branch Road project area with FHWA, NPS and DC SHPO to provide an overview of the project area; identify specific constraints due to limited right-of-way and topography; and address specific resource issues, including cultural resources in Rock Creek Park that may require rehabilitation or replacement to meet project objectives (e.g., existing stone retaining walls).

DDOT has also conducted or attended meetings with other agencies about the project. DDOT attended a meeting with the Commission of Fine Arts (CFA) on August 8, 2013, to address curb cuts for new access driveways proposed by private landowners subdividing property on the

west side of Broad Branch Road in the current project area. CFA requested a formal presentation by DDOT before the entire CFA review committee to determine any major issues in the alternatives before the project progresses to the final design stage. CFA will also receive a copy of the EA when it is released to the public.

DDOT hosted a meeting with representatives of DC Water on August 20, 2013, to identify potential concerns or conflicts from a proposed project to replace or rehabilitate aging sanitary sewer infrastructure in Soapstone Valley. The DC Water project partially overlaps the Broad Branch Road project area and includes existing sewer lines and manholes in DDOT right-of-way near the Soapstone Creek culvert. Additional coordination will be required to avoid potential conflicts between the two projects.

5.2 PUBLIC INVOLVEMENT

DDOT held two public meetings to help inform as well as solicit input from the general public on the proposed project. Numerous methods were employed to publicize the public meetings, including newspaper advertisements in The Current Newspapers and El Tiempo Latino and announcements on the project website at http://www.broadbranchrdea.com/index.html. Postings were also made to the surrounding communities' and Advisory Neighborhood Commission's (ANC) list serves and announcements were e-mailed to all individuals and special interest groups who requested to be on the project mailing list.

DDOT held a Public Scoping Meeting at the Chevy Chase Community Center, 5601 Connecticut Avenue, NW in Washington, DC on July 13, 2011 from 6:30 to 8:30 p.m. The purpose of the open house meeting was to introduce the project and to provide all interested persons the opportunity to provide comments regarding the project. Maps, displays, and background information were available for review at the meeting. Twelve citizens signed in at the meeting. Comments were submitted by 17 individuals including two written comment forms and two verbal comments recorded by a verbatim reporter at the meeting, and 13 comments submitted by electronic mail (e-mail) between July 13, 2011 and July 28, 2011.

DDOT held a second Public Meeting at The Methodist Home of DC, 4901 Connecticut Avenue, NW in Washington DC on November 8, 2012 from 6:30 to 8:30 p.m. The purpose of this second public meeting was to provide an update on study activities and to afford interested persons an opportunity to provide comments on the preliminary alternatives being considered for the project. Various engineering concepts for reconstruction of the roadway, stormwater management systems, sidewalks, and bikeways were reviewed and discussed at the meeting. Of the citizens who attended the meeting, 33 signed in. Written comments were submitted by 14 individuals at the meeting and a verbatim reporter documented verbal comments from 6 meeting attendees.

No requests for special assistance or translations were received prior to the meetings. Meeting handouts were available in English and Spanish at all public meetings.

Throughout the study, DDOT provided a project website that detailed the project history and current activities associated with the proposed Broad Branch Road EA study. The website

provided the public with continuous opportunity to provide comments via e-mail to BroadBranch@parsons.com.

SUMMARY OF COMMENTS RECEIVED

The following is a summary of the comments received via e-mail prior to the July 13, 2011 Public Scoping Meeting (3); at the Scoping Meeting by way of written comment forms (2) and verbal comments (2); and in e-mails immediately following the meeting (10 e-mails):

COMMENT	NUMBER OF COMMENTS
Prioritize non-motorized traffic (pedestrians and cyclists)/provide both sidewalks and bike lanes along Broad Branch Road	5
Linkages/access for to NPS resources (e.g., shoulder for Soapstone Valley Trail, crosswalk to Ridge Road)	4
Keep informed of project information and meetings	4
Traffic Safety/Public Health	3
Repair the roadway	2
Integrate traffic calming measures	2
Vehicle sight line improvements	2
Stormwater Management improvements	2
Do not provide sidewalks along Broad Branch Road	1
Improvements for cyclists	1
Sidewalk on the west side of the roadway	1
Path along Broad Branch	1
Bicycle lane for uphill cycling along Broad Branch Road	1
Dedicated bike lanes	1

The following is a summary of the written (14) and oral (6) comments received at the November 8, 2012 Public Meeting and the forms and e-mails received following the meeting (1 form and 22 e-mails) through December 17, 2012:

COMMENT	NUMBER OF COMMENTS
Safety	**41**
Safety (Add sidewalks and bike lanes)	25
Safety (Traffic calming measures)	14
Safety (Add crosswalks)	2
Design	**28**
Design (Repair/fix roadway)	11
Design (Add bike lanes)	4
Design (No retaining walls; retaining walls excessive)	4
Design (Widen roadway)	2
Design (Minimize commuter function)	2
Design (Lighting)	2
Design (Fix dangerous intersection)	1
Design (Signage for bicycle use)	1

COMMENT	NUMBER OF COMMENTS
Design (Context sensitive)	1
Stormwater Management and Erosion Control	18
Communication and Better Public Outreach	10
Trail/Bike Access to Rock Creek Park	9
Protect Setting, Vegetation, and Trees	6
Maintain Country Road Feel	5
Alternatives are Inadequate	2
Protect Rock Creek Park	2
Manage Detours during Construction	2
Cost (Too expensive)	2
Cultural Resources	1
Regulations (Cite DC Law correctly)	1

6 LIST OF PREPARERS

DISTRICT DEPARTMENT OF TRANSPORTATION

INFRASTRUCTURE PROJECT MANAGEMENT ADMINISTRATION

55 M Street, SE
Washington, DC 20003

Wayne Wilson	Project Manager
Faisal Hameed	Manager, Project Development and Environment Division
Saadat Khan	Environmental Policy Analyst
Jim Sebastian	Bicycle Planner

FEDERAL HIGHWAY ADMINISTRATION

DISTRICT OF COLUMBIA DIVISION

1990 K Street, NW, Suite 510
Washington, DC 20006

Michael Hicks	Environmental Engineer

SHELADIA ASSOCIATES, INC.

15825 Shady Grove Road, Suite 100
Rockville, MD 20850

NAME	EDUCATION AND EXPERIENCE	PROJECT ROLE
Tirlok Singh	B.S. Civil Engineering Institute of Engineers, Calcutta, India, 1962 50 years of experience in civil engineering	Project Manager - Alternatives Development and Preliminary Engineering
Piyush Radadiya	M.S. Civil Engineering Gujarat University, 1998 B.S. Civil Engineering Saurashtra University, 1995 15 years of experience in civil engineering	Deputy Project Manager - Alternatives Development and Preliminary Engineering

PARSONS TRANSPORTATION GROUP

100 M Street, SE
Washington, DC 20003

NAME	EDUCATION AND EXPERIENCE	PROJECT ROLE
Stephen Walter	M.S. Environmental Studies University of New Haven, 1985 B.S. Environmental Conservation Virginia Tech, 1976 36 years of experience in environmental/ transportation planning and NEPA documentation	Task Manager – NEPA Document
Prakash Patel	B.S. Civil Engineering BVM (Birla Vishvakarma Mahavidyalaya), India, 1977 35 years of experience in roadway, utilities, grading, and drainage design	Engineering Review
Joseph Springer	Masters Degree Program in Urban Planning University of Virginia, 1985-1986 B.A. English and Art History College of William and Mary, 1984 26 years of experience in environmental/ transportation planning and air/noise analysis	Transportation Analysis, Air and Noise Analysis
Danielle Gresham	M.S. Wildlife and Fisheries M.S. Renewable Natural Resources University of Arizona, 1995 B.A. Biology, Mills College, 1991 19 years of experience in natural resource planning and NEPA documentation	Alternatives Analysis, NEPA Document
Rachael Mangum	M.A. Anthropology George Washington University, 2008 B.A. Anthropology Wake Forest University, 1997 12 years of experience in cultural resource analysis and NEPA documentation	Purpose and Need, Alternatives Analysis, Cultural Resources

Susan Bupp	M.A. Anthropology University of Wyoming, 1981 B.A. Anthropology Wichita State University, 1977 35 years of experience in cultural resource analysis and management	Cultural Resources, Section 4(f)
Rebecca Chojnacki	B.S. Biotechnology and Biology University of Wisconsin, 2004 7 years of experience as an environmental scientist/natural resources field biologist	Natural Resources, Socioeconomic Resources, Transportation, Hazardous Waste/Materials
Victoria Guobaitis	M.S. Civil Engineering Georgia Institute of Technology, 2011 B.S. Civil Engineering Georgia Institute of Technology, 2010 3 years transportation engineering experience	Traffic Analysis
Caroline Rice	B.S. Civil and Environmental Engineering Virginia Tech, 2012 1 year experience in civil engineering	Engineering and CADD Support
Kevin Chrisman	B.S. Advertising Design University of Maryland, 1989 24 years of experience in graphic design and document production	Graphic Design and Document Production
Melanie Delion	M.A. Applied Ecology SUNY Stony Brook, 2006 B.S. Biology University of Maryland, 2005 4 years of experience as a GIS aanalyst	GIS / Mapping

7 ENVIRONMENTAL ASSESSMENT DISTRIBUTION

FEDERAL/REGIONAL AGENCIES

Mr. Joseph C. Lawson
Division Administrator
Federal Highway Administration,
District of Columbia Division
1990 K Street NW
Suite 510
Washington, DC 20006

Mr. Michael Hicks
Urban/Environmental Engineer
Federal Highway Administration,
District of Columbia Division
1990 K Street NW
Suite 510
Washington, DC 20006

Ms. Tara Morrison
Superintendent, Rock Creek Park
National Park Service
3545 Williamsburg Lane, NW
Washington, DC 20008

Ms. Cynthia Cox
Deputy Superintendent, Rock Creek Park
National Park Service
3545 Williamsburg Lane, NW
Washington, DC 20008

Mr. Joel Gorder
Regional Planning and Environmental Coordinator
National Park Service
National Capital Region
1100 Ohio Drive, SW
Washington, DC 20242

Mr. Leopoldo Miranda
Supervisor
Chesapeake Bay Field Office
U.S. Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21404

Mr. David Hayes
Regional Planner and Transportation Liaison
US Department of the Interior
National Park Service
National Capital Region
1100 Ohio Drive, SW
Washington, DC 20242

Ms. Vera B. Jaffe
Regulatory Specialist
U.S. Army Corps of Engineers
PO Box 1715
Baltimore, MD 21203

Ms. Barbara Rudnick
NEPA Team Leader
U.S. Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19103

Ms. Susan McPartland
Program Manager
U.S. Department of State
Office of Foreign Missions, Property, Tax, Services and Benefits
2201 C Street, NW
Room 2236
Washington, DC 20520

Mr. Tom Luebeke
Secretary
Commission of Fine Arts
401 F Street, NW
Suite 312
Washington, DC 20001

Mr. Ronald Kirby
Director
Metropolitan Washington Council of Governments - Transportation Planning
777 N. Capitol Street, NE
Suite 300
Washington, DC 20002

Mr. Carlton Hart
National Capital Planning Commission
Urban Design and Plan Review
401 9th Street, NW
North Lobby
Suite 500
Washington, DC 20004

Mr. George S. Hawkins
General Manager
DC Water
5000 Overlook Drive
Washington, DC 20032

Mr. Richard Sarles
General Manager
Washington Metro Area Transit Authority
600 5th Street, NW
Washington, DC 20001

DISTRICT AGENCIES

Ms. Harriet Tregoning
Director
District of Columbia Office of Planning
1100 4th Street, SW
Suite E650
Washington, DC 20024

Mr. Andrew Lewis
Senior Historic Preservation Specialist
DC Office of State Historic Preservation
1100 4th Street, SW, Suite E650
Washington, DC 20024

Mr. Tim Karikari
Branch Chief
District Department of the Environment
Watershed Protection Division
1200 First Street, NE
Washington, DC 20002

Mr. Adion Chinkuyu
District Department of the Environment
Water Quality Division
1200 First Street, NE
5th Floor
Washington, DC 20002

Mr. Steve Saari
Watershed Protection Specialist
District Department of the Environment
1200 First Street, NE
6th Floor
Washington, DC 20002

Mr. Bryan King
District Department of the Environment
Fisheries and Wildlife Division
51 N Street, NE
Washington, DC 20002

Mr. Jesús Aguirre
Director
District Department of the Environment
Department of Parks and Recreation
3149 16th Street, NW
Washington, DC 20010

DISTRICT ELECTED OFFICIALS

The Honorable Muriel Bowser
Ward 4 Councilmember
1350 Pennsylvania Avenue, NW
Suite 110
Washington, DC 20004

The Honorable Mary M. Cheh
Ward 3 Councilmember
1350 Pennsylvania Avenue, NW
Suite 108
Washington, DC 20004

ADVISORY NEIGHBORHOOD COMMISSIONS

Commissioner Chair Adam Tope
ANC-3F01
4319 Reno Road, NW
Washington, DC 20008

Commissioner Chair Jim McCarthy
ANC-3G06
3835 Livingston Street, NW
Washington, DC 20015

Commissioner Chair Dwayne M. Toliver
ANC -4A02
1326 Hemlock Street NW
Washington, DC 20012

UTILITIES

Mr. Allan Melliza
Washington Gas Company
6801 Industrial Road
Springfield, VA 22151

Mr. Asi Jacob Mbah
DC Water
Planning and Design Branch
5000 Overlook Avenue, SW
Washington, DC 20032

Mr. Tim Outsa
Verizon Communication
13101 Columbia Pike FDC1
Silver Spring, MD 20904

INTEREST GROUPS

Mr. Rick Morgan
The People's Alliance for Rock Creek
733 15th Street, NW
Suite 1030
Washington, DC 20005

Mr. Tom Downs
Friends of Rock Creek's Environment
3035 Oliver Street, NW
Washington, DC 20015

Carnegie Institution of Washington
Department of Terrestrial Magnetism
5241 Broad Branch Road, NW
Washington, DC 20008

PUBLIC REVIEW COPIES

Chevy Chase Branch Library
5625 Connecticut Avenue, NW
Washington, DC 20015

Tenley-Friendship Neighborhood Library
4450 Wisconsin Avenue, NW
Washington, DC 20016

Cleveland Park Neighborhood Library
3310 Connecticut Avenue, NW
Washington, DC 20008

Federal Highway Administration
1990 K Street, NW
Suite 510
Washington, DC 20006-1103

District Department of Transportation
55 M Street, SE
4th Floor
Washington, DC 20003

SOVEREIGN NATIONS

Ambassador Claudio Bisogniero
Government of Italy
2800 Albemarle Street
1601 Fuller Street, NW
Washington, DC 20009-5601

Ambassador Daouda Diabate
Embassy of the Republic of Ivory Coast
5111 Broad Branch Road
2424 Massachusetts Avenue, NW
Washington, DC 20008

Ambassador Datuk Othman Hashim
Federation of Malaysia
4500 Broad Branch Road, NW
Washington, DC 20008-1005

Ambassador Harold Forsyth
Government of the Republic of Peru
3001 Garrison Street, NW
Washington, DC 20008

Ambassador Mokhtar Chaouachi
Kingdom of Tunisia
5131 Broad Branch Road, NW
Washington, DC 20008-1012

8 REFERENCES

AASHTO (American Association of State and Highway Transportation Officials)

1999 *Guide for the Development of Bicycle Facilities*. Prepared by the AASHTO Task Force on Geometric Design. Available online at: http://safety.fhwa.dot.gov/ped_bike/docs/b_aashtobik.pdf. Accessed April 15, 2013.

AASHTO (American Association of State and Highway Transportation Officials)

2004 *Guide for the Planning, Design, and Operation of Pedestrian Facilities.*

AECOM

2012 Preliminary Engineering Report: Replacement of the 27th Street, NW Bridge over Broad Branch Stream. Prepared for the District of Columbia, Department of Transportation. Prepared by AECOM.

Baist, G. William E.

1903 Baist's Real Estate Atlas of Surveys of Washington, District of Columbia. Volume III, Plates 27 and 32. Available on line at: http://memory.loc.gov/. Accessed April 15, 2013.

1907 Baist's Real Estate Atlas of Surveys of Washington, District of Columbia. Volume III, Plates 27 and 32. Available online at: http://memory.loc.gov/. Accessed April 15, 2013.

1911 Baist's Real Estate Atlas of Surveys of Washington, District of Columbia. Volume III, Plates 27 and 32. Available online at: http://memory.loc.gov/. Accessed April 15, 2013.

1913 Baist's Real Estate Atlas of Surveys of Washington, District of Columbia. Volume III, Plates 27 and 32. Available online at: http://memory.loc.gov/ . Accessed April 15, 2013.

1919 Baist's Real Estate Atlas of Surveys of Washington, District of Columbia. Volume III, Plates 27 and 32. Available online at: http://memory.loc.gov/. Accessed April 15, 2013.

1937 Baist's Real Estate Atlas of Surveys of Washington, District of Columbia. Volume III, Plates 27 and 32. Available on line at: http://www.historicmapworks.com/Atlas/US/20722/Washington+D.C.+1937+Vol+3/. Accessed April 15, 2013.

Bauer, L.A. and J.A. Fleming

1915 Research Buildings of the Department of Terrestrial Magnetism. In *Land Magnetic Observations 1911-1913 and Reports on Special Researches*, pp. 185- 200. Researches of the Department of Terrestrial Magnetism Volume II. Published by the Carnegie Institution of Washington, Washington, D.C.

Bedell, John, Stuart Fiedel, and Charles LeeDecker
2008 "Bold, Rocky, and Picturesque" Archeological Overview and Assessment and Archeological Identification and Evaluation Study of Rock Creek Park, District Of Columbia. Volume I, Final Report: Historic Overview. Prepared for the National Capital Region, National Park Service, Washington, DC Prepared by The Louis Berger Group, Inc., Washington, DC.

Bosche, A.
1861 Topographical Map of the District of Columbia, surveyed in the years 1856, 1857, 1858, and 1859. Engraved by D. McClelland. Available online at: http://memory.loc.gov. Accessed April 15, 2013.

Brown, Louis
2004 Centennial History of the Carnegie Institution of Washington. Volume II: Department of Terrestrial Magnetism. Cambridge University Press, Cambridge, United Kingdom.

Bureau of Land Management (BLM)
2010 Paleontology Laws- Omnibus Public Land Management Act- Paleontological Resources Preservation. Available online at: http://www.blm.gov/wo/st/en/prog/more/CRM/paleontology/paleontological_regulations.html. Accessed April 4, 2012.

Bushong, William
1990a Historic Resource Study, Rock Creek Park, District of Columbia. Prepared by the United States Department of the Interior, National Park Service.

Bushong, William
1990b Rock Creek Park Historic District. National Register of Historic Places Registration Form. US Department of Interior, National Park Service, Washington, DC

Census (U.S. Census Bureau)
2010 2010 Census Summary File 1 – P9 Hispanic or Latino, and Not Hispanic or Latino by Race.

Cowardin, Lewis M., Virginia Carter, Francis C. Golet, and Edward T. LaRoe
1979 Classification of Wetlands and Deepwater Habitats of the United States. Prepared for the US Department of the Interior, Fish and Wildlife Service, Office if Biological Services, Washington, DC 20240.

Davis, Timothy
1996 "Rock Creek Park Road System." Historic American Engineering Record Narrative Report, HAER No. DC-55. Report on file at the Library of Congress, Washington, DC

DC Government

2005 Title 21 of the DC Municipal Regulations, Chapter 11, Water Quality Standards as amended October 4, 2005.

DC Government

2007a District of Columbia Comprehensive Plan Future Land Use Map. Office of Planning, Government of the District of Columbia. Enacted as part of the Comprehensive Plan Amendment Act of 2006 (DC Law 16-299, effective March 8, 2007).

DC Government

2007b District of Columbia Comprehensive Plan Generalized Policy Map. Office of Planning, Government of the District of Columbia. Enacted as part of the Comprehensive Plan Amendment Act of 2006 (DC Law 16-299, effective March 8, 2007).

DC Government

2007c The Comprehensive Plan for the National Capital: District Elements. DC Office of Documents and Administrative Issuances. Section 3(d) of Bill 16-876 Adopted by the Council of the District of Columbia December 19, 2006. Dated October 2007. Available online at: http://planning.dc.gov/DC/Planning/Across+the+City/Comprehensive+Plan/2006+Comprehensive+Plan. Accessed April 15, 2013.

DCOZ (District of Columbia Office of Zoning)

2011 Zoning Map. Available online at: http://maps.dcoz.dc.gov/#. Accessed March 29, 2011.

District of Columbia Water and Sewer Authority (DC WASA)

1983a Counter Map, Sewer, IK-23-24-NW.

1983b Counter Map, Sewer, LM-23-24-NW.

DDOE (District Department of the Environment)

2010a List of District Regulated Open LUST Cases (Heating Oil Contaminated Sites). March. Available online at: http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494854,ddoeNav_GID,1486,ddoeNav,%7C31375%7C31377%7C.asp. Accessed May 11, 2010.

DDOE (District Department of the Environment)

2010b List of Federally Regulated Open LUST Cases (Petroleum Contaminated Sites-Not Heating Oil). March. Available online at: http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494854,ddoeNav_GID,1486,ddoeNav,%7C31375%7C31377%7C.asp. Accessed May 11, 2010.

DDOE (District Department of the Environment)
2010d List of Know Facilities with Active Underground Storage Tanks in DC. March. Available online at: http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494854,ddoeNav_GID,1486,ddoeNav,%7C31375%7C31377%7C.asp. Accessed May 11, 2010.

DDOE (District Department of the Environment)
2010e *Rock Creek Watershed Implementation Plan* (WIP). DDOE Watershed Protection Division. Washington, DC. August. Available online at: http://ddoe.dc.gov/ddoe/frames.asp?doc=/ddoe/lib/ddoe/stormwaterdiv/A_Rock_Creek_WIP_2010_Final.pdf.

DDOE (District Department of the Environment)
2011 District of Columbia Chesapeake Bay Program. Available online at: http://ddoe.dc.gov/ddoe/cwp/view,a,1209,q,494819.asp. Accessed March 24, 2011.

DDOE (District Department of the Environment)
2012 The District of Columbia Water Quality Assessment. 2012 Integrated Report to the US Environmental Protection Agency and Congress Pursuant to Sections 305(b) and 303(d) Clean Water Act (P.L. 97-117). Prepared by the District Department of the Environment, Natural Resources Administration, Water Quality Division, Washington, DC.

DDOE (District Department of the Environment) and NPS (National Park Service)
2012 Restoration of Unnamed Tributary to Broad Branch, Rock Creek Park, Environmental Assessment. Prepared by the District Department of the Environment and the National Park Service.

DDOT (District of Columbia Department of Transportation)
2005a Bicycle Facility Design Guide. December 2005.

DDOT (District of Columbia Department of Transportation)
2005b Bicycle Master Plan. April. Prepared by Toole Design Group, LLC, College Park, Maryland. Available online at: http://www.dc.gov/DC/DDOT/On+Your+Street/Bicycles+and+Pedestrians/Bicycles/Bicycle+Master+Plan/DC+Bicycle+Master+Plan+-+April+2005. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2005c DC Bicycle Master Plan - Proposed Bicycle Facilities Map. Available online at: http://www.dc.gov/DC/DDOT/On+Your+Street/Bicycles+and+Pedestrians/Bicycles/Bicycle+Master+Plan/DC+Bicycle+Master+Plan+-+Proposed+Bicycle+Facilities+Map. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2009a DC Bicycle Map. March. Available online at: http://www.dc.gov/DC/DDOT/Publication%20Files/On%20Your%20Street/Bicycles%20and%20Pedestrians/Bicycles/Bicycle%20Map/DCBikeMap2011_Fulldoc.pdf. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2009b DDOT Design and Engineering Manual, Chapter 28. April. Available online at: http://dc.gov/DC/DDOT/Projects+and+Planning/Standards+and+Guidelines/Design+and+Engineering+Manual/DDOT+Design+and+Engineering+Manual+-+April+2009. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2009c DDOT Functional Classification Map. 2009. Available online at: http://www.dc.gov/DC/DDOT/About+DDOT/Maps/Functional+Classification+Map. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2009d District of Columbia Pedestrian Master Plan. April. Available online at: http://www.dc.gov/DC/DDOT/On+Your+Street/Bicycles+and+Pedestrians/Pedestrians/Pedestrian+Master+Plan/Pedestrian+Master+Plan+2009. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2009e Standard Specifications for Highways and Structures. Available online at: http://www.dc.gov/DC/DDOT/Projects+and+Planning/Standards+and+Guidelines/DDOT+Standard+Specifications+for+Highways+and+Structures+-+2009. Accessed April 15, 2013.

DDOT (District of Columbia Department of Transportation)
2008 Environmental Policy and Process Manual.

EPA (Environmental Protection Agency)
2004 *Protecting Drinking Water Sources*. EPA – Office of Water. Available online at: http://water.epa.gov/lawsregs/rulesregs/sdwa/index.cfm. Accessed February 8, 2013.

EPA (Environmental Protection Agency)
2010a EnviroMapper for Envirofacts. Available online at: http://www.epa.gov/enviro. Accessed February 16, 2010.

FHWA (Federal Highway Administration)
1987 Technical Advisory T 6640.8A – Guidance for Preparing Environmental and Section 4(f) Documents

FHWA (Federal Highway Administration)
2009 *Manual on Uniform Traffic Control Devices (MUTCD), Traffic Controls for Bicycle Facilities, Part 9*. Including May 2012 Revisions 1 and 2. Available online at: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd09r1r2editionhl.pdf. Accessed April 15, 2013.

FHWA (Federal Highway Administration)
2013 Section 4(f) Tutorial. Available on line at: http://www.environment.fhwa.dot.gov/section4f/default.aspx. Accessed April 10, 2013.

Fiedel, Stuart J., John Bedell, and Charles LeeDecker
2004 Archeological Identification and Evaluation Study of Rock Creek Park, District of Columbia: Final Year 1 Management Summary. Prepared for the National Capital Region, National Park Service, Washington, DC. Prepared by The Louis Berger Group, Inc., Washington, DC

Fiedel, Stuart J., John Bedell, and Charles LeeDecker
2005 Archeological Identification and Evaluation Study of Rock Creek Park, District of Columbia: Final Year 2 Management Summary. Prepared for the National Capital Region, National Park Service, Washington, DC. Prepared by The Louis Berger Group, Inc., Washington, DC

Fiedel, Stuart J., John Bedell, and Charles LeeDecker
2006 Archeological Identification and Evaluation Study of Rock Creek Park, District of Columbia: Final Year 3 Management Summary. Prepared for the National Capital Region, National Park Service, Washington, DC. Prepared by The Louis Berger Group, Inc., Washington, DC

Fiedel, Stuart J., John Bedell, Charles LeeDecker, Jason Shellenhamer and Eric Griffitts
2008 "Bold, Rocky, and Picturesque" Archeological Overview and Assessment and Archeological Identification and Evaluation Study Of Rock Creek Park, District Of Columbia. Volume II, Final Report. Prepared for the National Capital Region, National Park Service, Washington, DC Prepared by The Louis Berger Group, Inc., Washington, DC

Googins, Keith
2005 Archaeological Survey Site Inventory Form for 51NW169. On file with the District of Columbia Historic Preservation Office, Washington, D.C. Prepared by The Louis Berger Group, Inc., Washington, D.C.

Hardy, Shaun J.
2012 Personal communication between Shaun J. Hardy, Librarian and Historian, Carnegie Institution of Washington, DTM-Geophysical Laboratory Library, Broad Branch Campus, Washington D.C. and Susan L. Bupp, Cultural Resources Specialist, Parsons, Washington, D.C.

Inashima, Paul Y.
1985 Archeological Investigation of Thirty-One Erosion Control and Bank Stabilization Sites along Rock Creek and Its Tributaries. US Department of the Interior, National Park Service, Denver Service Center, Denver.

Ingleside at Rock Creek
2011 About Us. Available online at: http://www.inglesideatrockcreek.org/independent-living-washington-dc.php. Accessed on March 14, 2012.

LaRouche, Genevieve
2013 Letter to Faisal Hameed, Government of the District of Columbia, Department of Transportation regarding Broad Brand Road Project Environmental Assessment, Washington, DC from Genevieve LaRouche, Supervisor, US Department of the Interior, Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, Maryland. May 28, 2013.

Mackintosh, Barry
1985 Rock Creek Park: An Administrative History. History Division, National Park Service, U.S. Department of the Interior, Washington, D.C. Available online at: http://www.nps.gov/rocr/historyculture/adhi.htm. Accessed on April 15, 2013.

Monteleone, Simone
2011a Brief History of Wall at Broad Branch Road. On file with Simone Monteleone, Cultural Resource Program Manager, Rock Creek Park, National Park Service.

Monteleone, Simone
2011b Personal Communication between Simone Monteleone, Cultural Resource Program Manager, Rock Creek Park and Susan L. Bupp, Parsons Cultural Resources Specialist regarding cultural resources and landscapes issues. April 8, 2011.

Moran, Jennifer
1997 Rediscovering Archaeological Resources at Rock Creek Park. Prepared for the National Capital Region, National Park Service, Washington, DC. Manuscript on file at the National Capital Region, National Park Service, Washington, DC

National Research Council
1987 *Paleontological Collecting*. Committee on Guidelines for Paleontological Collecting. National Academy Press, Washington, D.C.

NPS (National Park Service)
2001 Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-Making.

NPS (National Park Service)
2006 Rock Creek Park and the Rock Creek and Potomac Parkway Final General Management Plan/ Environmental Impact Statement, Washington, DC. Prepared by the National Park Service, US Department of the Interior.

NPS (National Park Service)
2003a Linnaean Hill, Rock Creek Park, National Park Service Cultural Landscapes Inventory. 1998, Revised 2003. On file at the National Park Service Headquarters, Rock Creek Park, Washington, D.C.

NPS (National Park Service)
2003b Peirce Mill, Rock Creek Park, National Park Service Cultural Landscapes Inventory. 1998, Revised 2003. On file at the National Park Service Headquarters, Rock Creek Park, Washington, D.C.

NPS (National Park Service)
2004 *Final Management Plan: Fort Circle Parks*. Available online at: http://www.planning.nps.gov/plans.cfm. Accessed February 13, 2012.

NPS (National Park Service)
2007 Civil War Defenses of Washington: History & Culture. Available online at: http://www.nps.gov/cwdw/historyculture/index.htm. Accessed April 20, 2011.

NPS (National Park Service)
2009a National Rivers Inventory. February. Available online at: http://www.nps.gov/ncrc/programs/rtca/nri/states/dc.html. Accessed March 24, 2011.

NPS (National Park Service)
2009b Rock Creek Park, Washington D.C. – Vegetation/Land Use. June.

NPS (National Park Service)
2009 *Rock Creek Park: Geologic Resources Inventory Report*. Natural Resources Report NPS/NRPCGRD/NRR 2009/146. Prepared by the U.S. Department of the Interior, National Park Service, Geologic Resources Division, National Resource Program Center, Denver, Colorado.

NCRTPB (National Capital Region Transportation Planning Board)
2012 *Transportation Improvement Program for the Metropolitan Washington Region FY 2013 – 2018*. Approved July 18, 2012. Washington, DC. Available online at: http://www.mwcog.org/clrp/projects/tip/fy1318tip/FULL_FY13-18_TIP.pdf. Accessed April 15, 2013.

Rock Creek Park (Rock Creek National Park)
2010 Personal Communication. Meeting with Bill Yeaman and Joe Kish, Natural Resources Specialists with Rock Creek Park. August 12, 2010.

Southworth, S., and D. Denenny

2006 *Geologic Map of the National Parks in the National Capital Region, Washington, D.C., Virginia, Maryland and West Virginia.* Scale 1:24,000. Open-File Report OF 2005-1331. Reston, VA: U.S. Geological Survey. Available online at: http://pubs.er.usgs.gov/usgspubs/ofr/ofr20051331. Accessed April 15, 2013.

Swinton, William

1881 Map of the District of Columbia. Ivision, Blakeman, Taylor and Company, New York. Available on line at: http://alabamamaps.ua.edu/historicalmaps/us_states/washingtondc/. Accessed April 15, 2013.

Toole, Jennifer

2010 *Update of the AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*. Prepared for the National Cooperative Highway Research Program Transportation Research Board of The National Academies. Available online at: http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-07%28263%29_FR.pdf. Accessed April 15, 2013.

UNESCO (United Nations Educational, Scientific, and Cultural Organization)

2010 World Heritage. Online list of World Heritage Sites and Biosphere Reserves, V3.0. September. Available online at: http://whc.unesco.org/en/activities/497/. Accessed September 10, 2010.

USDA (United States Department of Agriculture)

2013 Online Web Soil Survey. District of Columbia - Survey Area Data: Version 5, September 14, 2006. Available online at: http://websoilsurvey.nrcs.usda.gov/app/. Accessed February 8, 2013.

United State Geological Survey (USGS)

1891 Washington. U.S. Geological Survey, Department of the Interior, Washington ,D.C. Available on line at: http://alabamamaps.ua.edu/historicalmaps/us_states/washingtondc/. Accessed April 15, 2013.

1898 Washington and Vicinity. U.S. Geological Survey, Department of the Interior, Washington ,D.C. 1:62,500. Available on line at: http://alabamamaps.ua.edu/historicalmaps/us_states/washingtondc/. Accessed April 15, 2013.

1900 Washington Quadrangle. U.S. Geological Survey, Department of the Interior. 1:62,500. Available on line at: http://alabamamaps.ua.edu/historicalmaps/us_states/washingtondc/. Accessed April 15, 2013.

1945 Washington West, DC 7.5 minute quadrangle. Available on line at: **http://historical.mytopo.com/quad.cfm?quadname=Washington%20West&state=DC&series=7.5**. Accessed January 29, 2013.

Wagner, Daniel P.
2011 Geoarchaeological Interpretations of the Broad Branch Stream Restoration Project in Northwest Washington, D.C. Prepared for Greenhorne & O'Mara, Inc.

William and Mary, Department of Geology.
2009 Piedmont Geology of Virginia. Available online at:, http://web.wm.edu/geology/virginia/provinces/piedmont/piedmont.html. Accessed February 8, 2013.

Woods, A. J., J. M. Omernik, and D. D. Brown.
2003 Level III and IV Ecoregions of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia. US Environmental Protection Agency, National Health and Environmental Effects Research Laboratory. Corvallis, OR, USA. Available online at: http://www.epa.gov/wed/pages/ecoregions/reg3_eco.htm. Accessed February 8, 2013.

Yeaman, William
2011 Personal Communication between William (Bill) Yeaman, Natural Resources Specialist, Rock Creek Park, National Park Service and Rebecca Chojnacki with Parsons Transportation Group regarding natural resources concerns in the Broad Branch Road project area. Electronic mail dated April 26, 2011.

Yeaman, William
2013 Personal Communication between William (Bill) Yeaman, Natural Resources Specialist, Rock Creek Park, National Park Service and Rebecca Chojnacki with Parsons Transportation Group regarding rare, threatened, or endangered species in the Broad Branch Road project area. Electronic mail dated January 22, 2013.

9 INDEX

A IMPROVEMENT CONCEPTS

As part of the project planning process, members of the general public as well as representatives from government agencies were asked to participate in developing improvement concepts for Broad Branch Road. Participants were provided with a series of "building blocks" that included roadway, stormwater management, and pedestrian and bicyclist elements and asked to construct the optimal configuration for the improvement. See **Figure A-1** below.

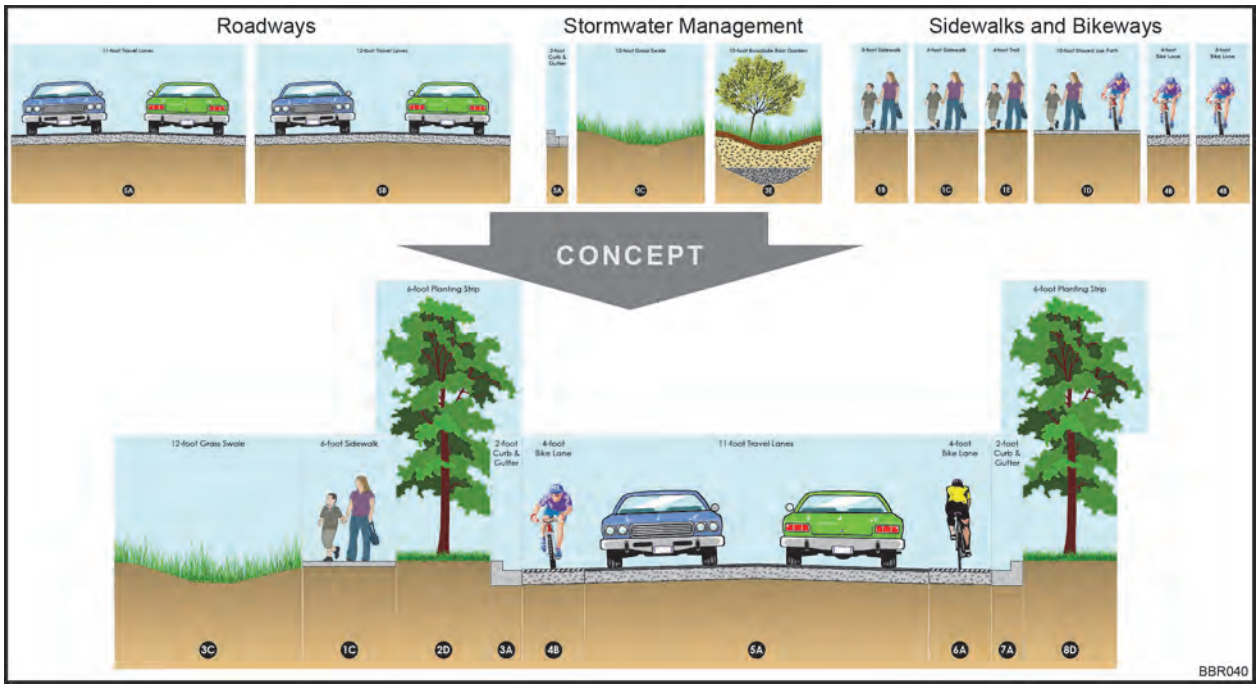


Figure A-1. "Building Blocks" to Roadway Concepts

The width of each individual element was provided and the ultimate width of the concept was then compared to the existing right-of-way width (as shown on an accompanying aerial map of the corridor).

Participants at the Public Scoping/Alternatives Meeting created seven concepts that varied in composition and width. These concepts are shown in **Figure A-2**.

As part of an Agency Alternatives Meeting, representatives from federal and local government agencies created 22 concepts. These concepts are presented in **Figure A-3**.

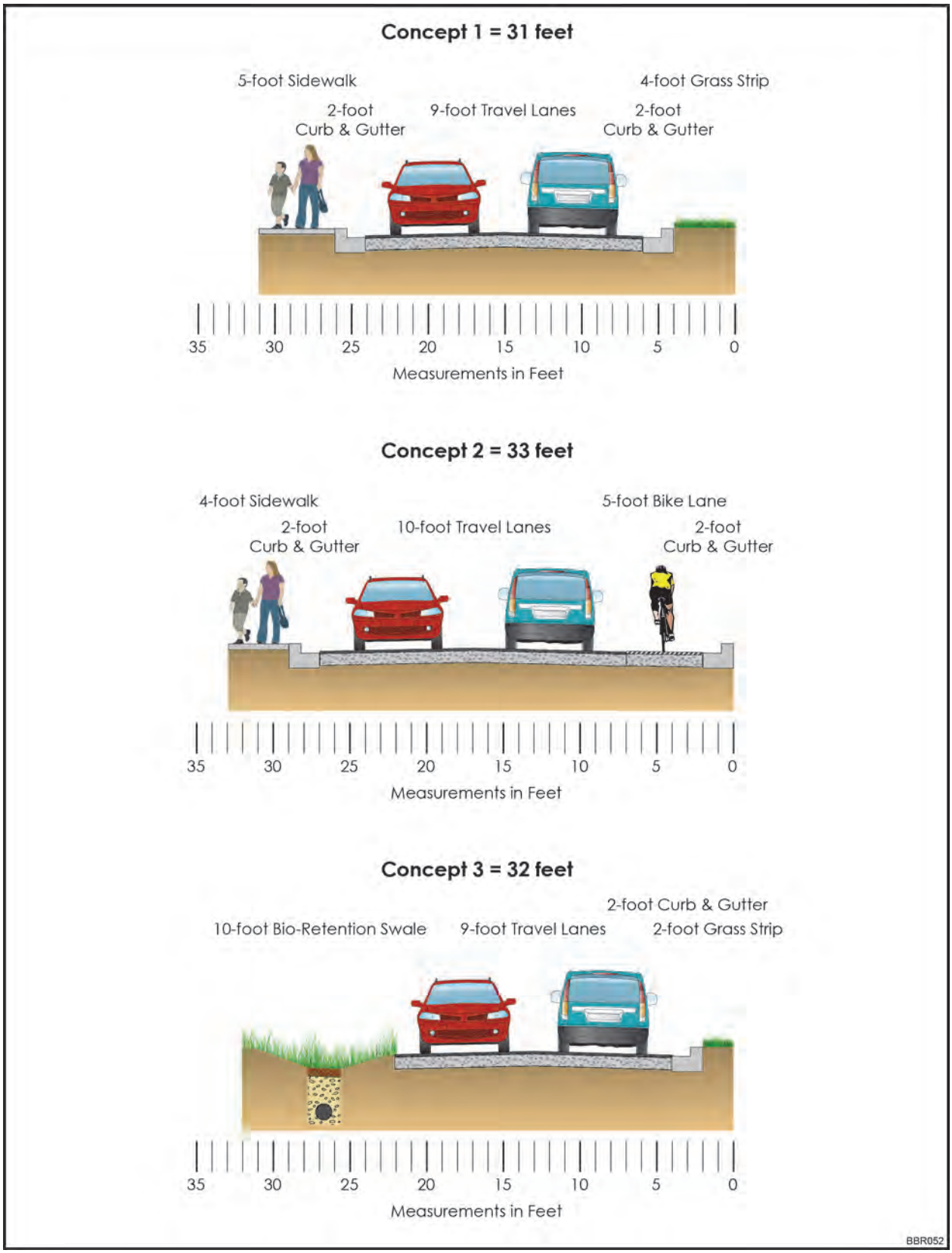


Figure A-2. Concepts Developed by General Public
(Sheet 1)

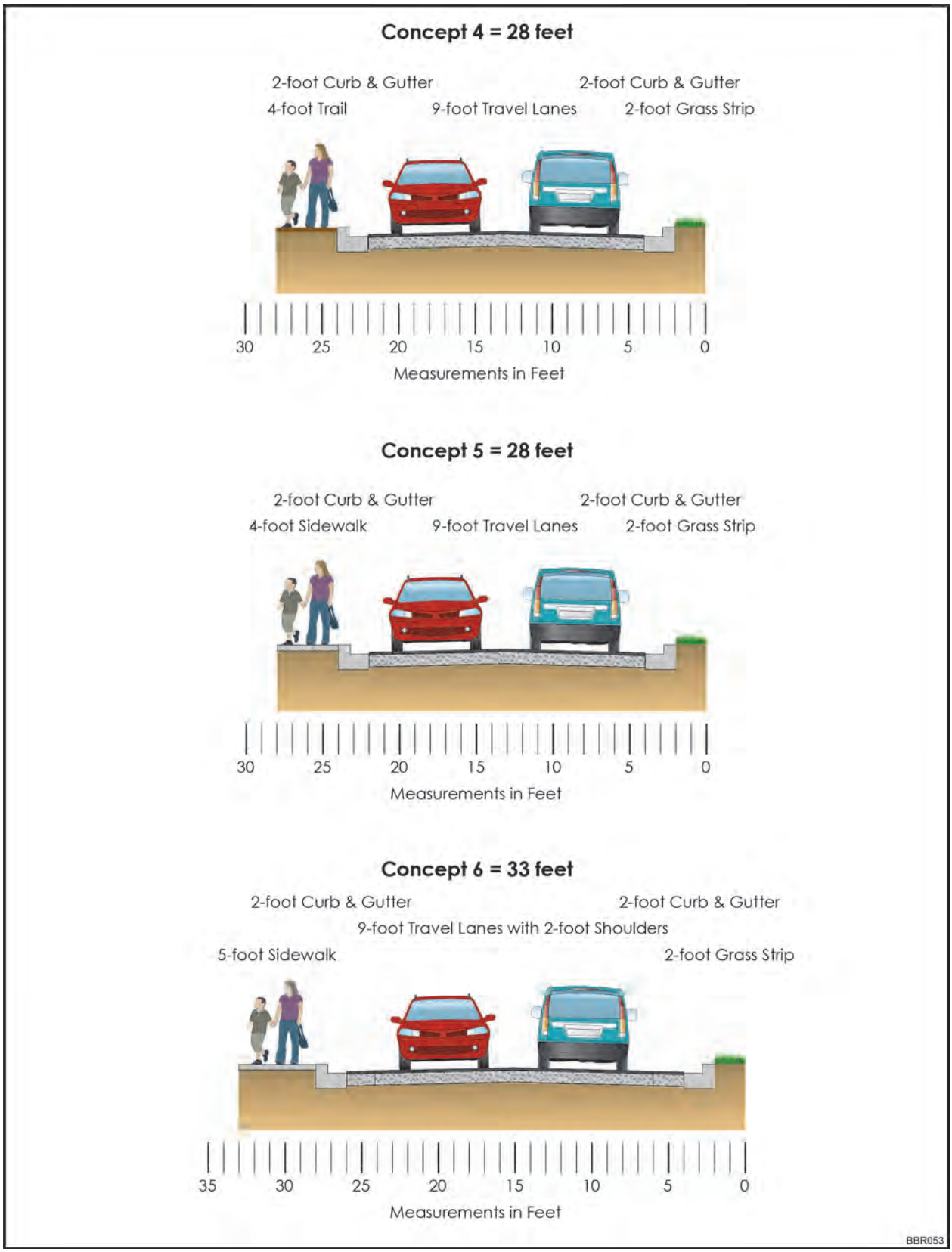


Figure A-2. Concepts Developed by General Public
(Sheet 2)

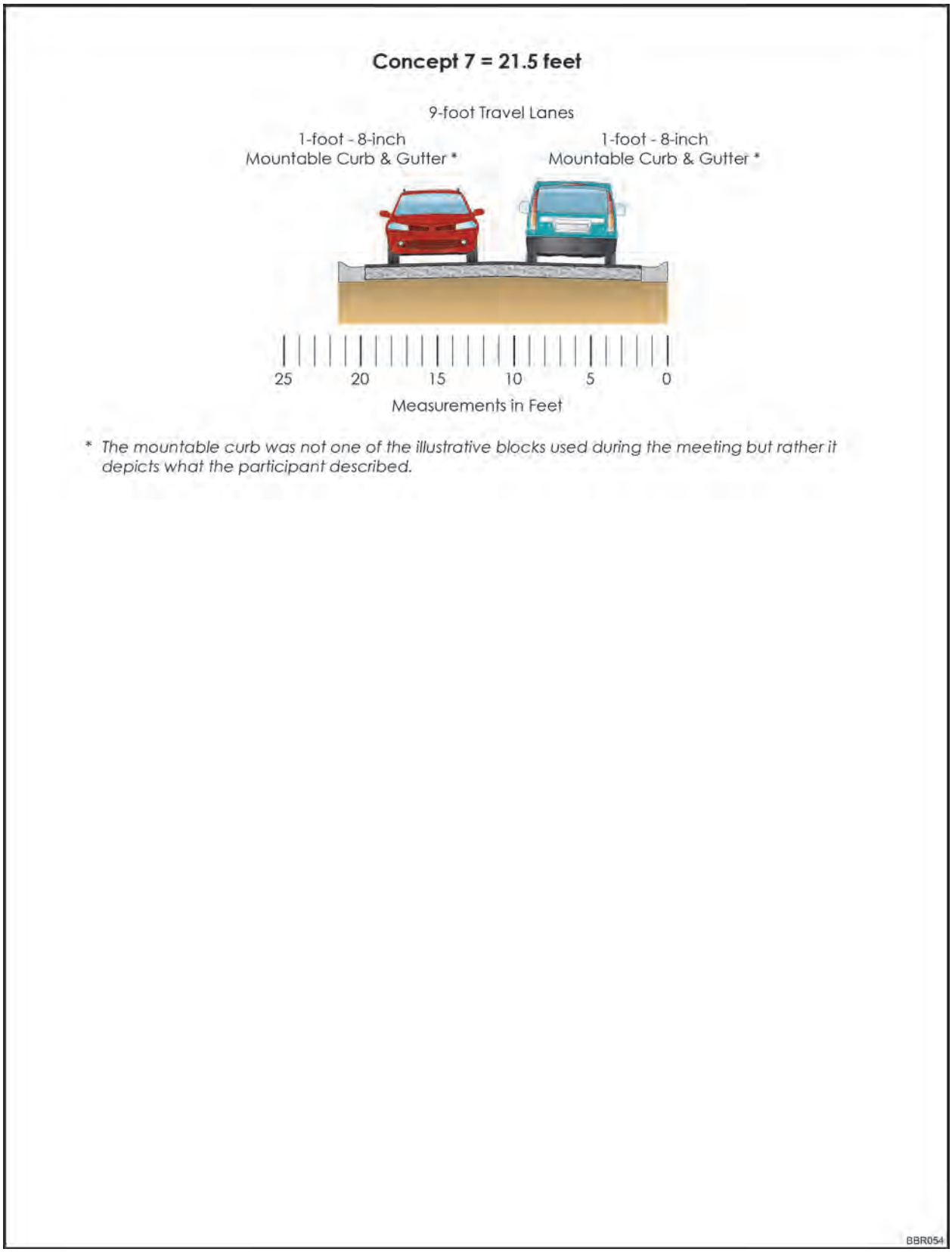


Figure A-2. Concepts Developed by General Public
(Sheet 3)

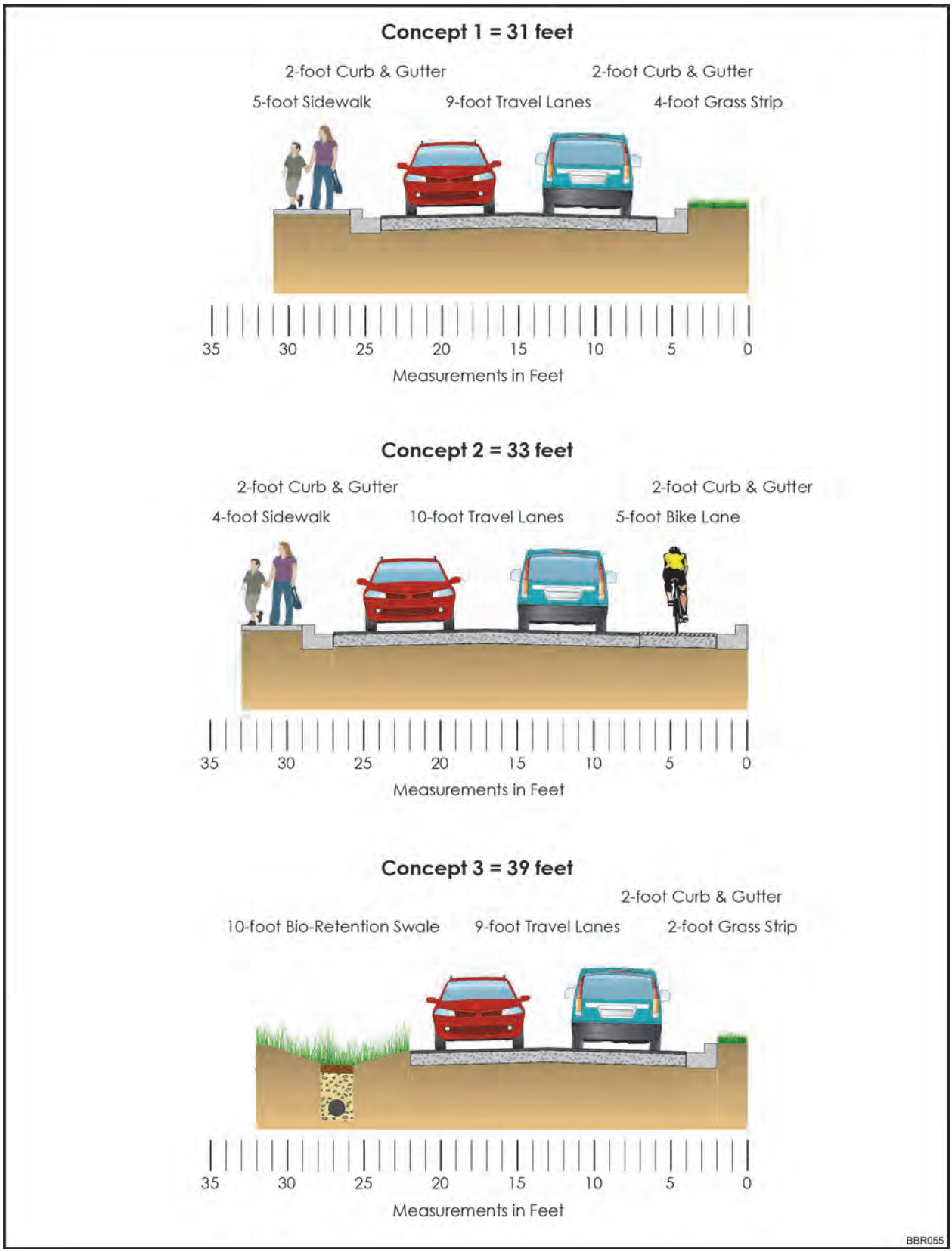


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 1)

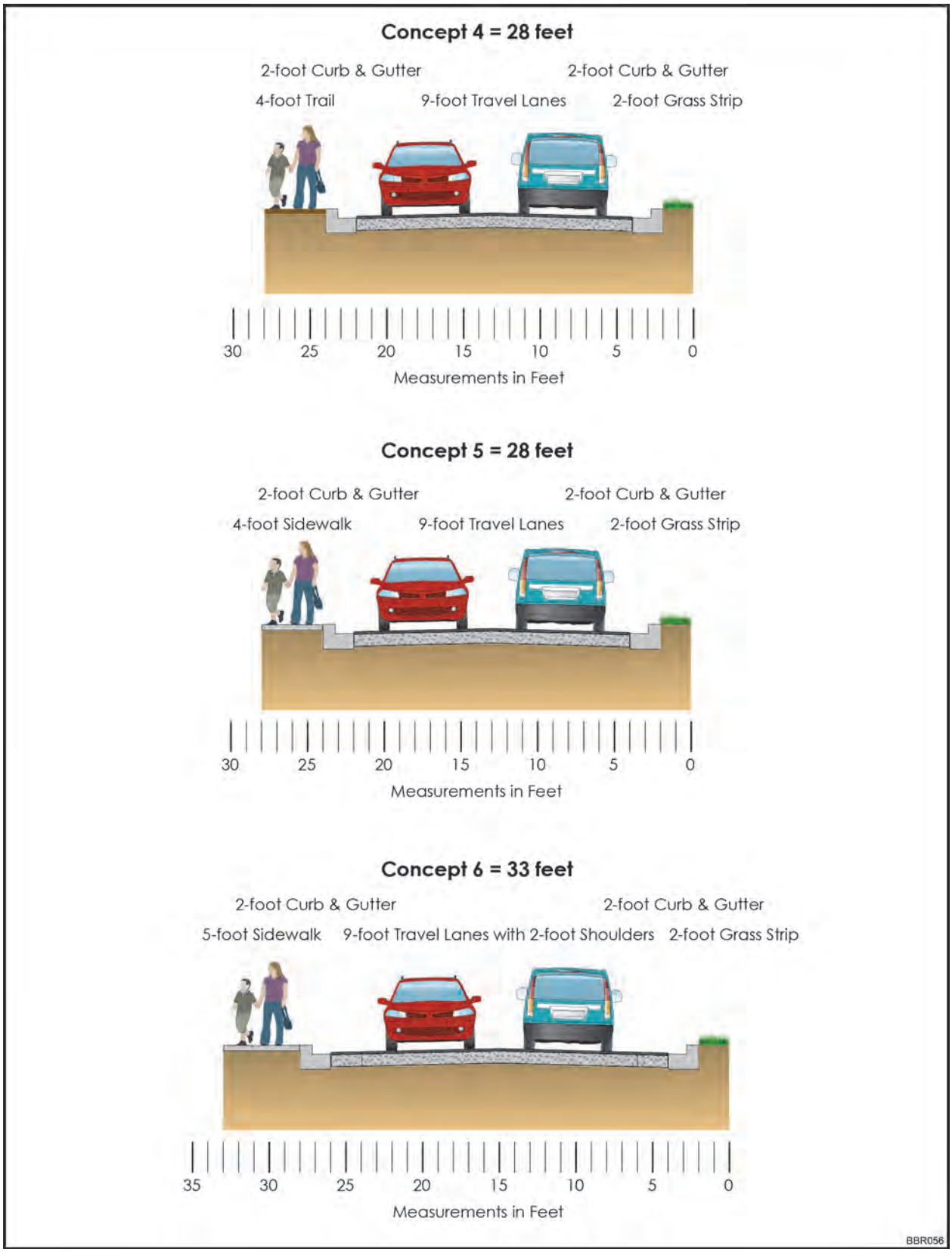


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 2)

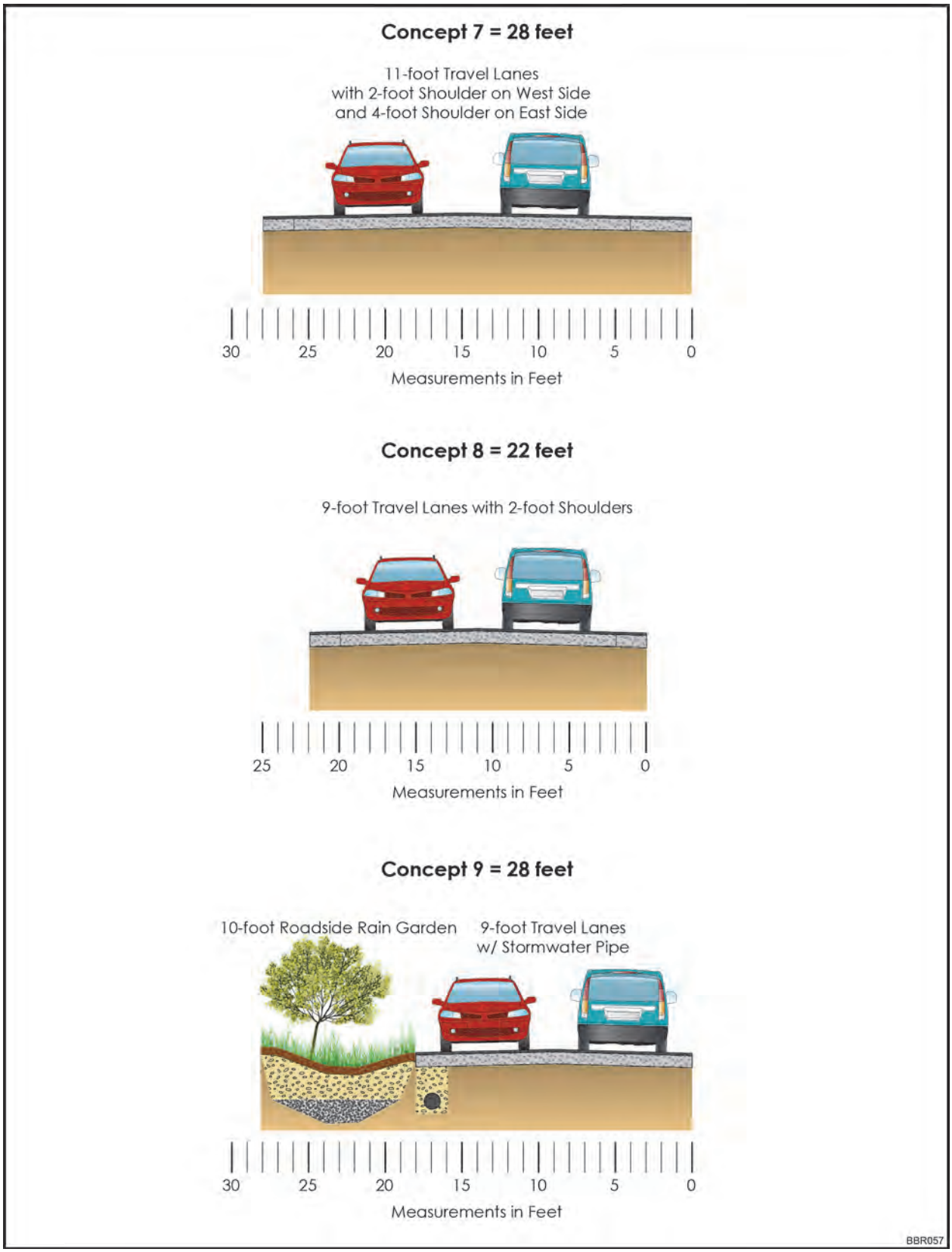


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 3)

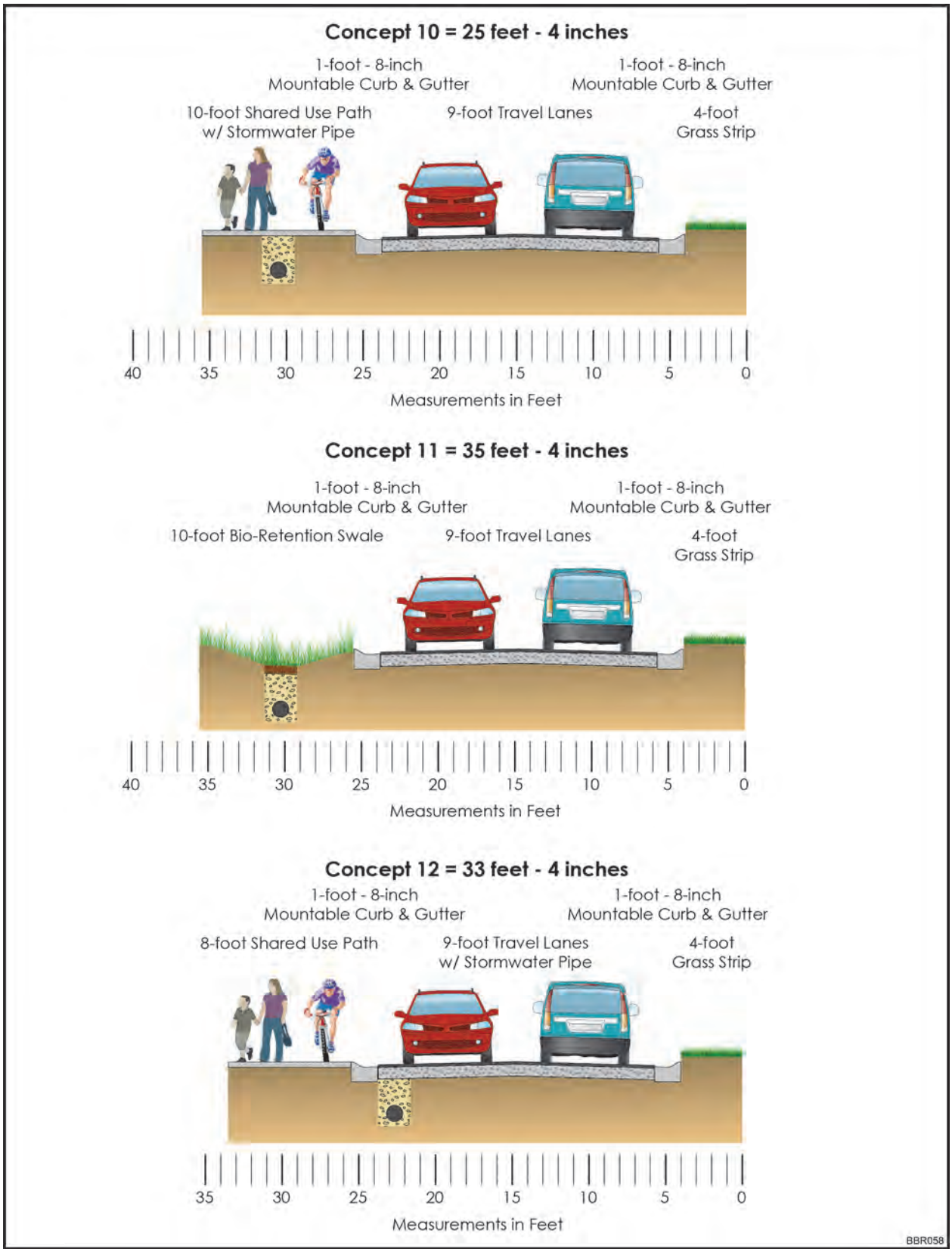


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 4)

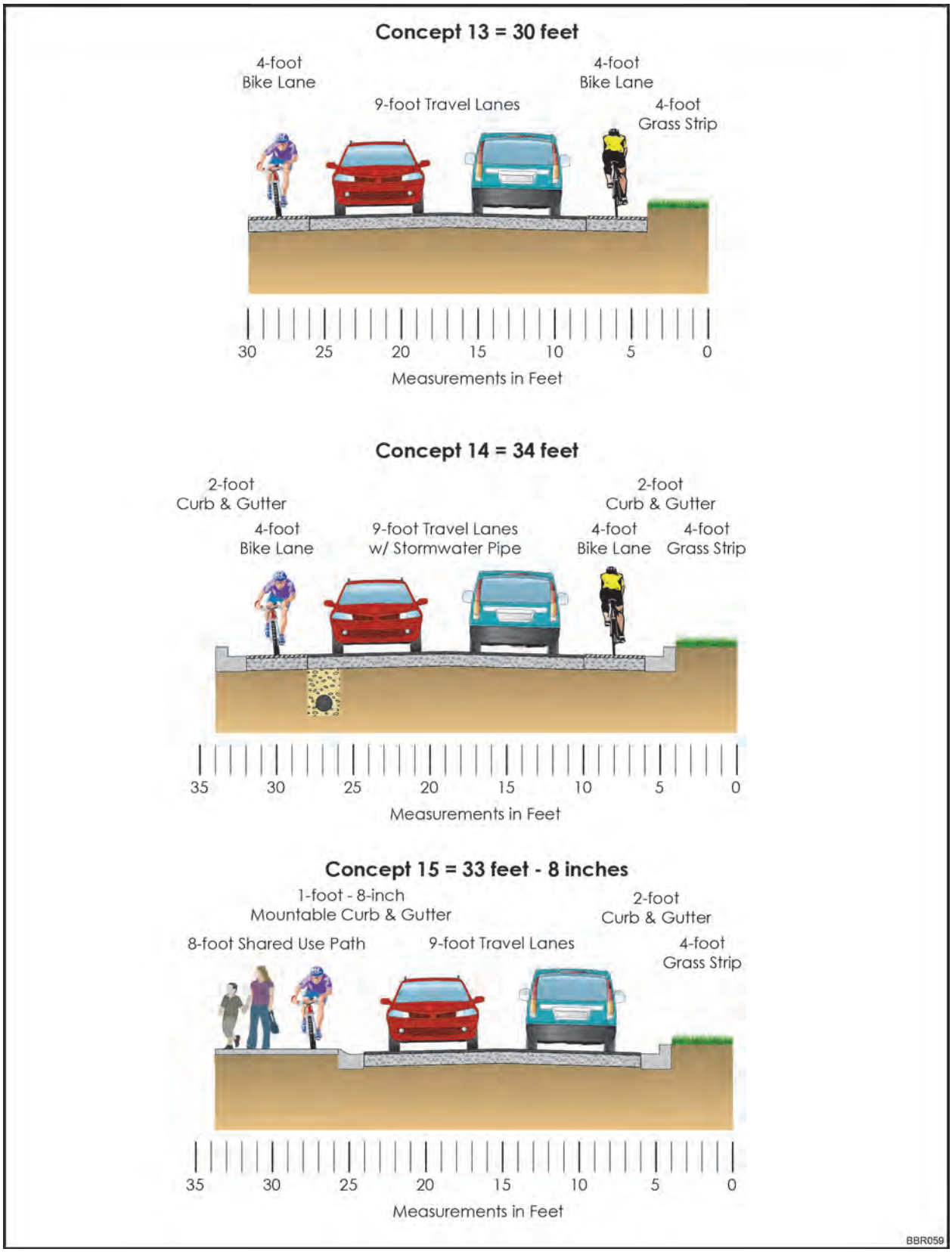


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 5)

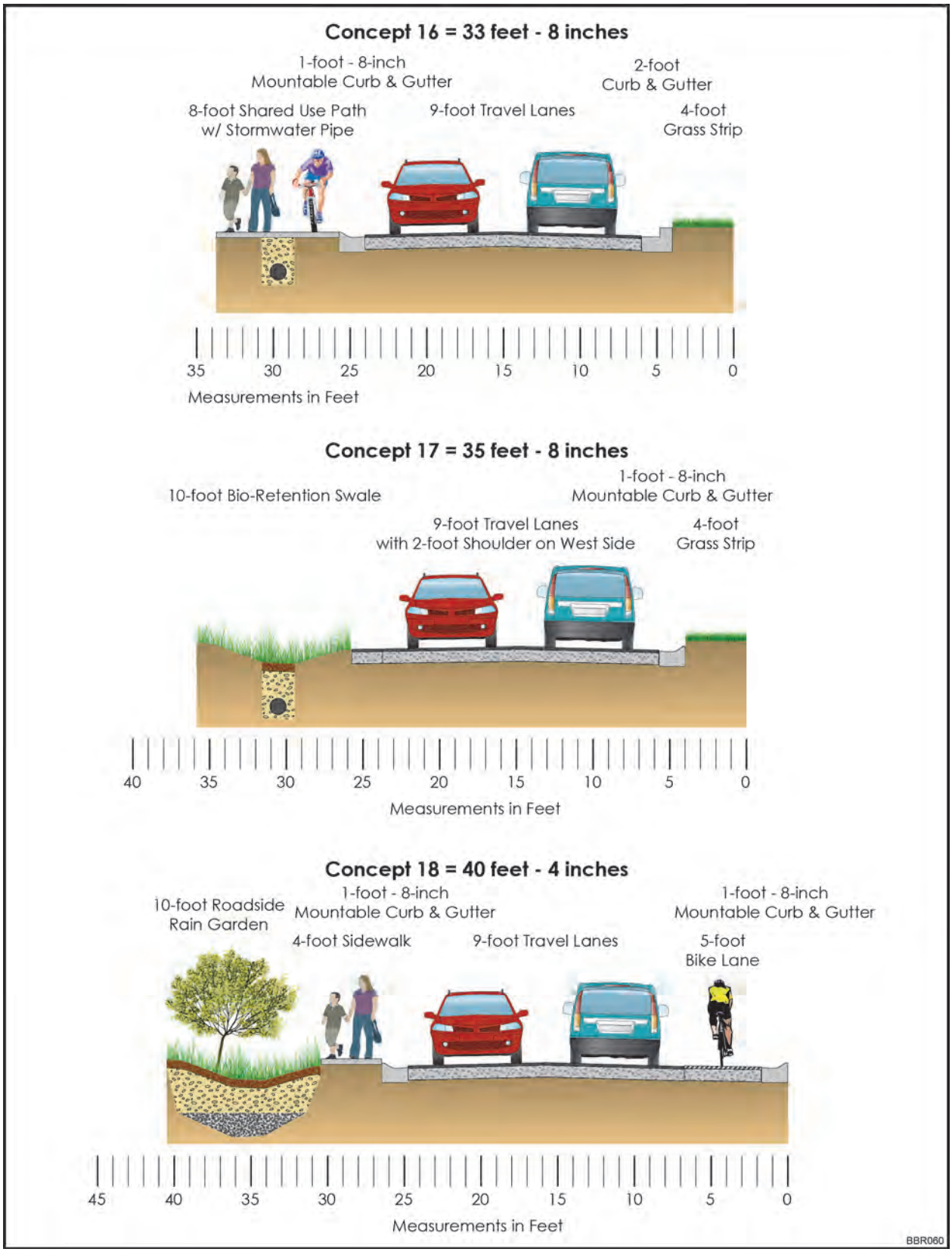


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 6)

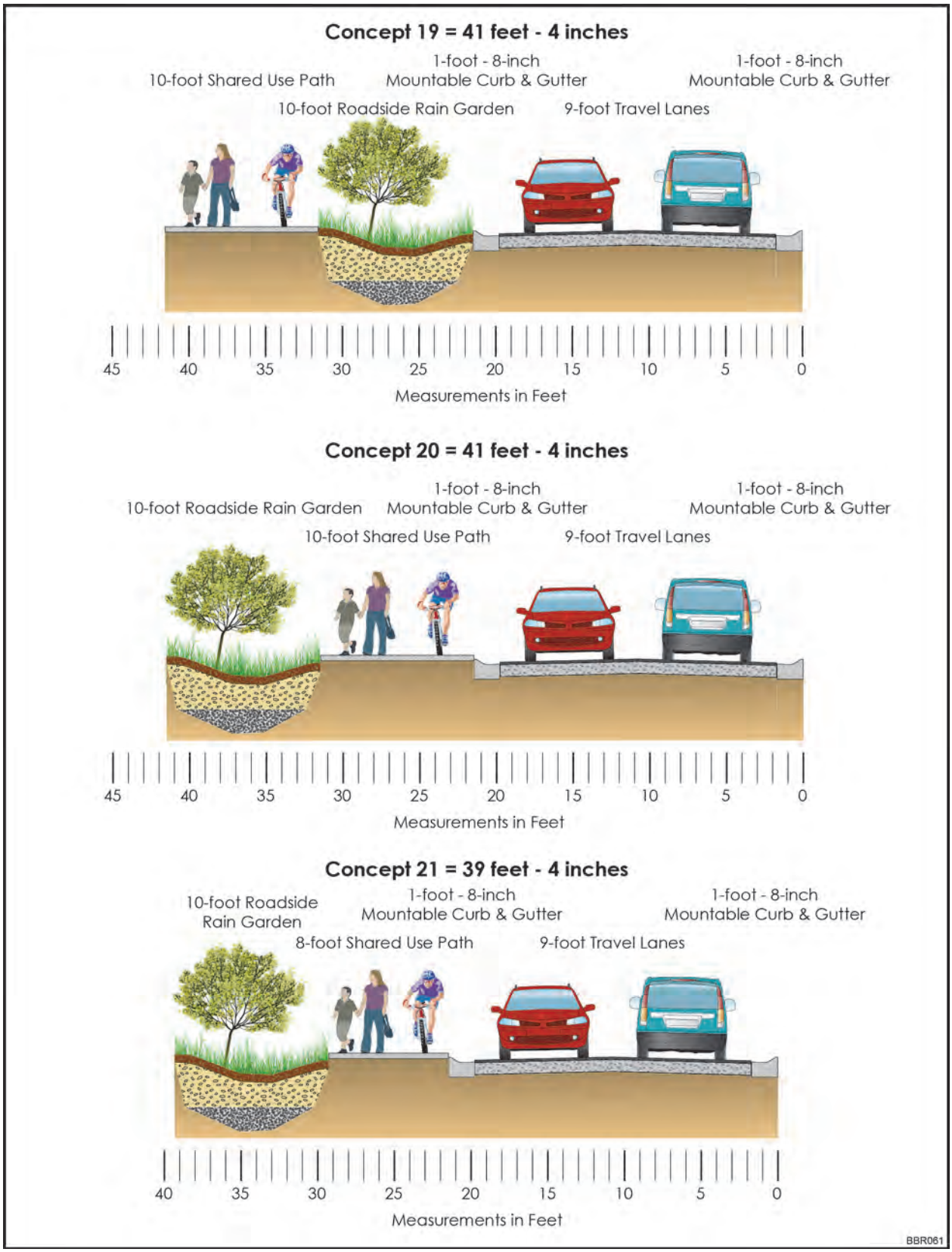


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 7)

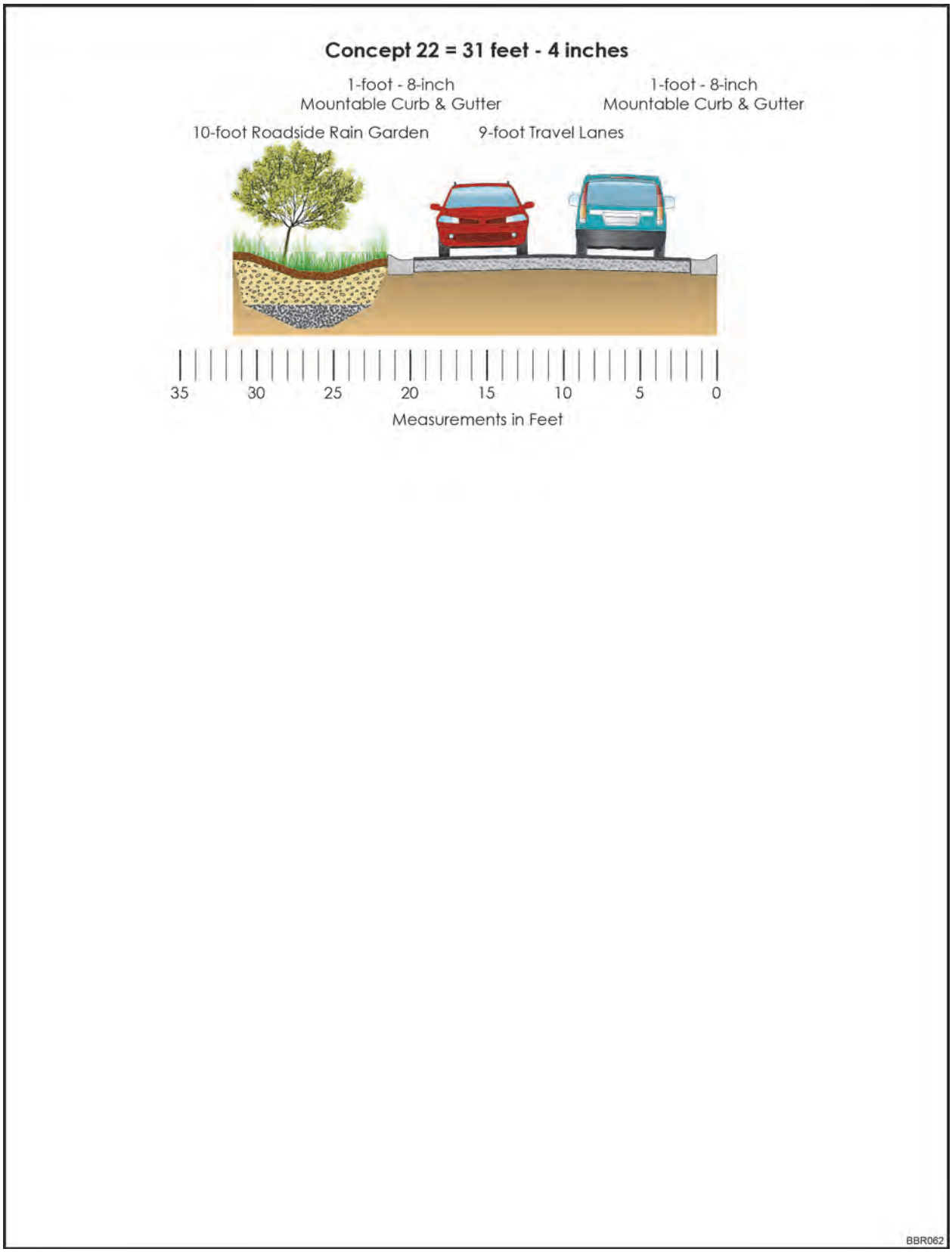


Figure A-3. Concepts Developed by Agency Representatives
(Sheet 8)

B CONCEPTUAL ALIGNMENT PLANS – CANDIDATE BUILD ALTERNATIVES

The following exhibits present the conceptual alignment plans for each of the three Candidate Build Alternatives. These plans depict the general extent of roadway, sidewalks and bike lanes, as well as general locations of coping and retaining walls. Areas of cut and/or fill required for roadway construction are presented to indicate the area of potential disturbance. Typical sections are included at several locations to illustrate the relationship to existing right-of-way lines. All typical sections are oriented so the viewer is looking southbound.

The 1.5-mile project is depicted on nine separate sheets as noted in the key map below. Baseline stations are shown at 100-foot intervals starting with Station 15+00 at the Linnean Avenue intersection and moving in a southbound direction. These station points are presented to reference specific locations described in the document. Additional sheets are shown at the end of Alternative 2 for Options A and B.

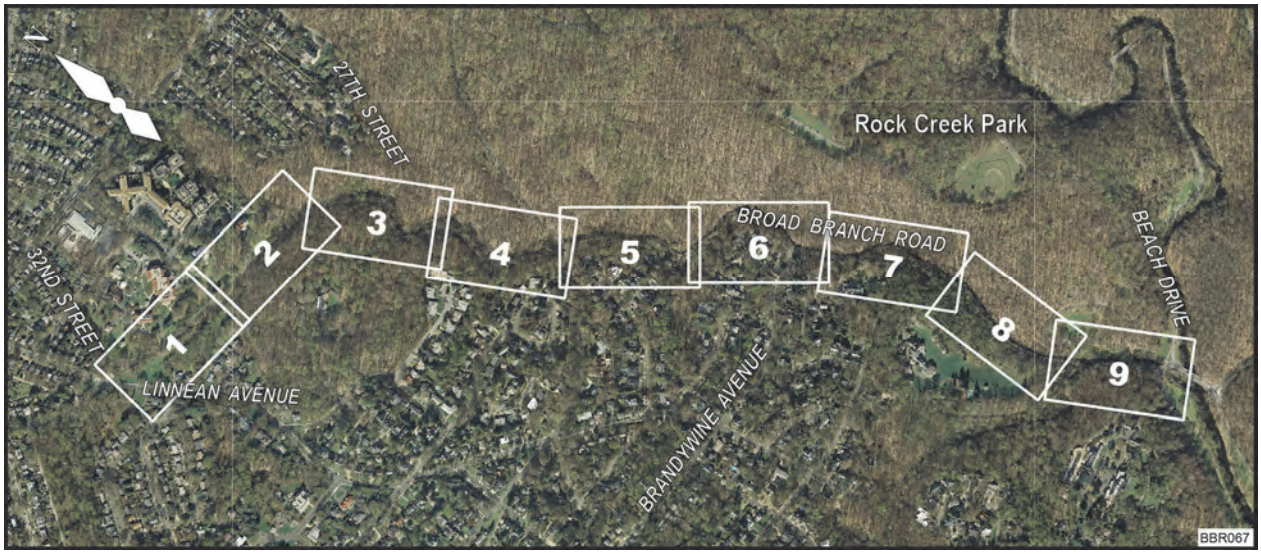


Figure B-1.Key Map

Figure B-2. Alternative 2
(Sheet 1)

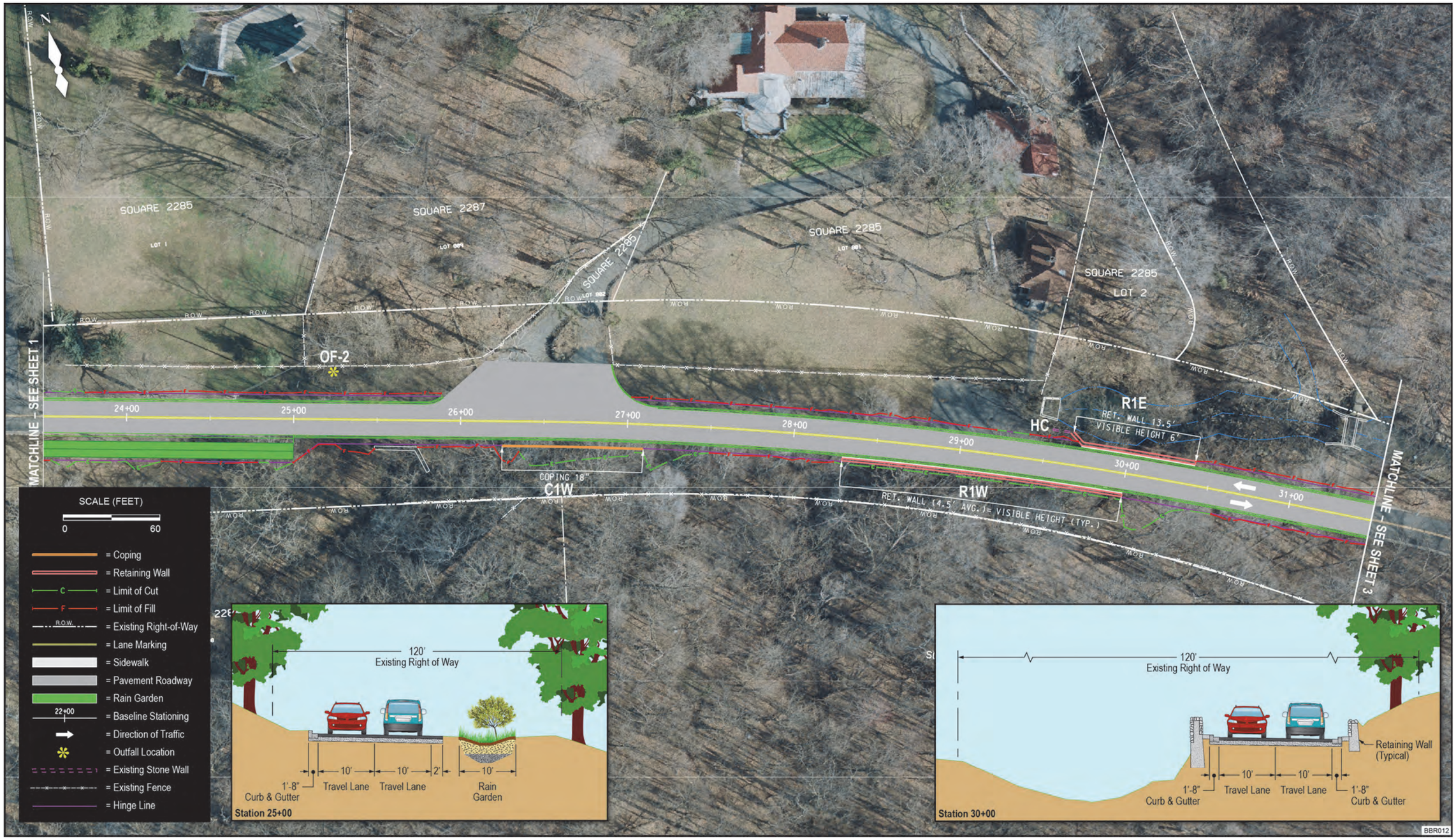


Figure B-2. Alternative 2
(Sheet 2)

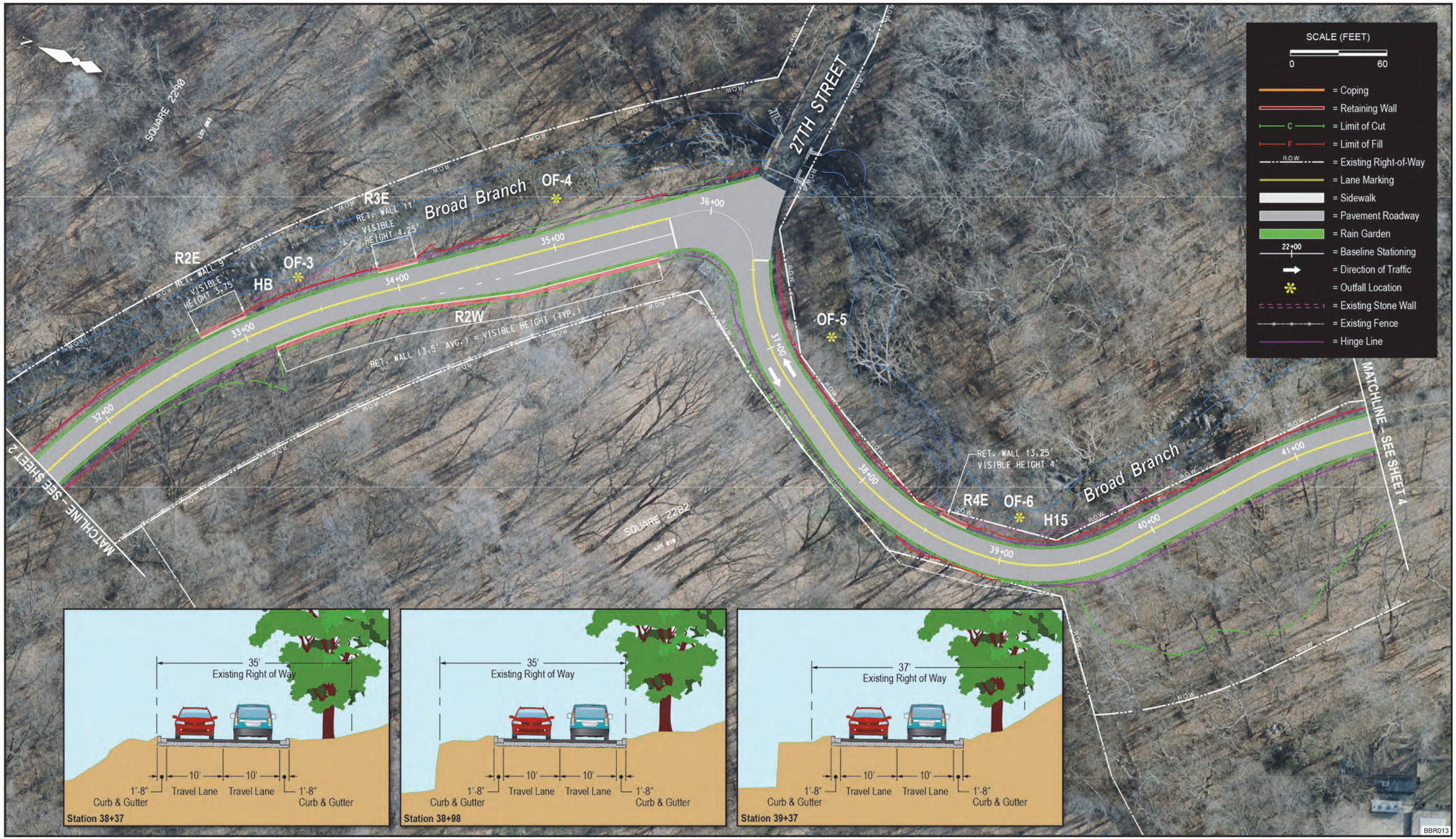


Figure B-2. Alternative 2
(Sheet 3)

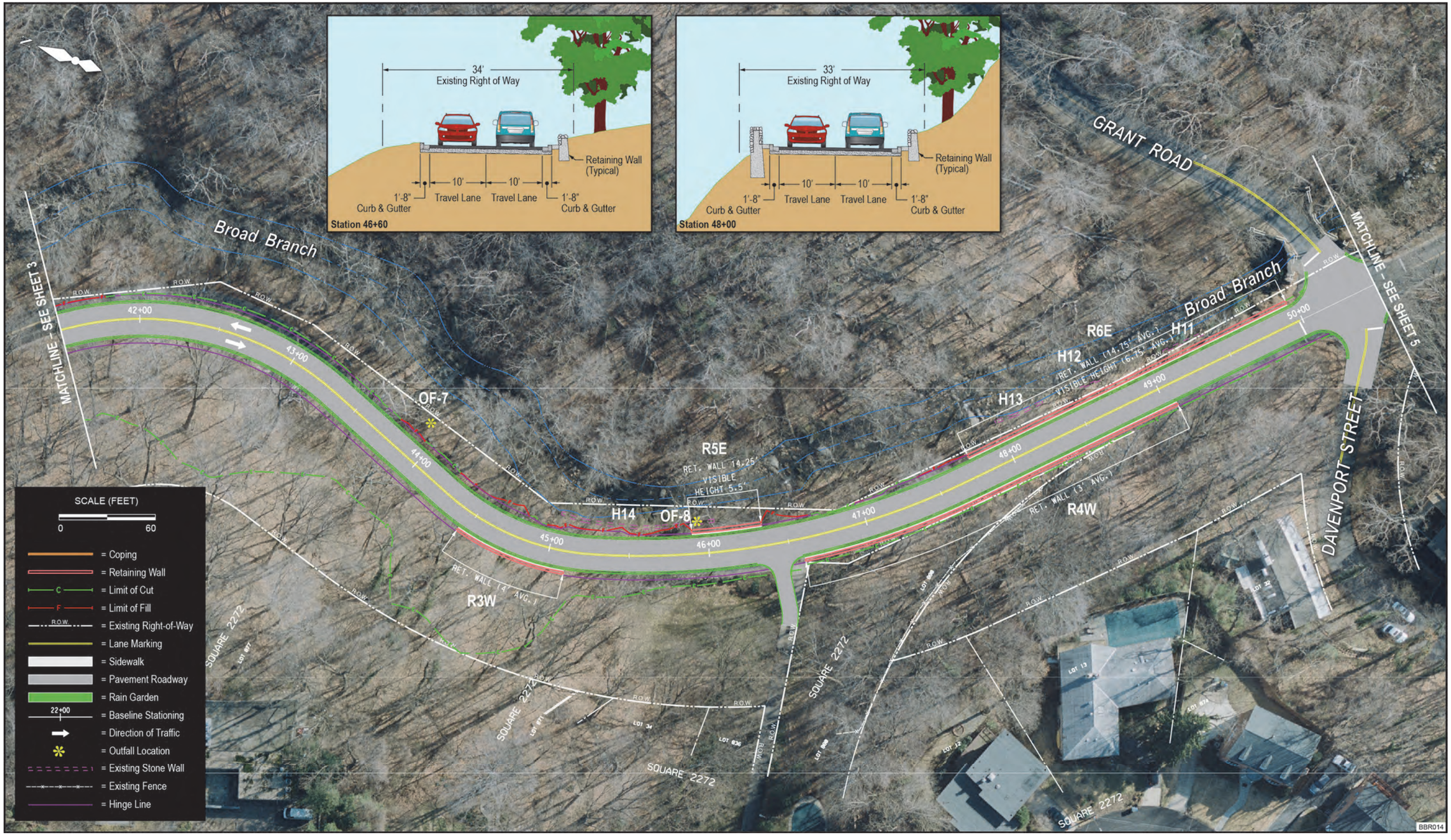


Figure B-2. Alternative 2
(Sheet 4)

Figure B-2. Alternative 2
(Sheet 5)

Figure B-2. Alternative 2
(Sheet 6)

Figure B-2. Alternative 2
(Sheet 7)

Figure B-2. Alternative 2
(Sheet 8)

Figure B-2. Alternative 2
(Sheet 9)

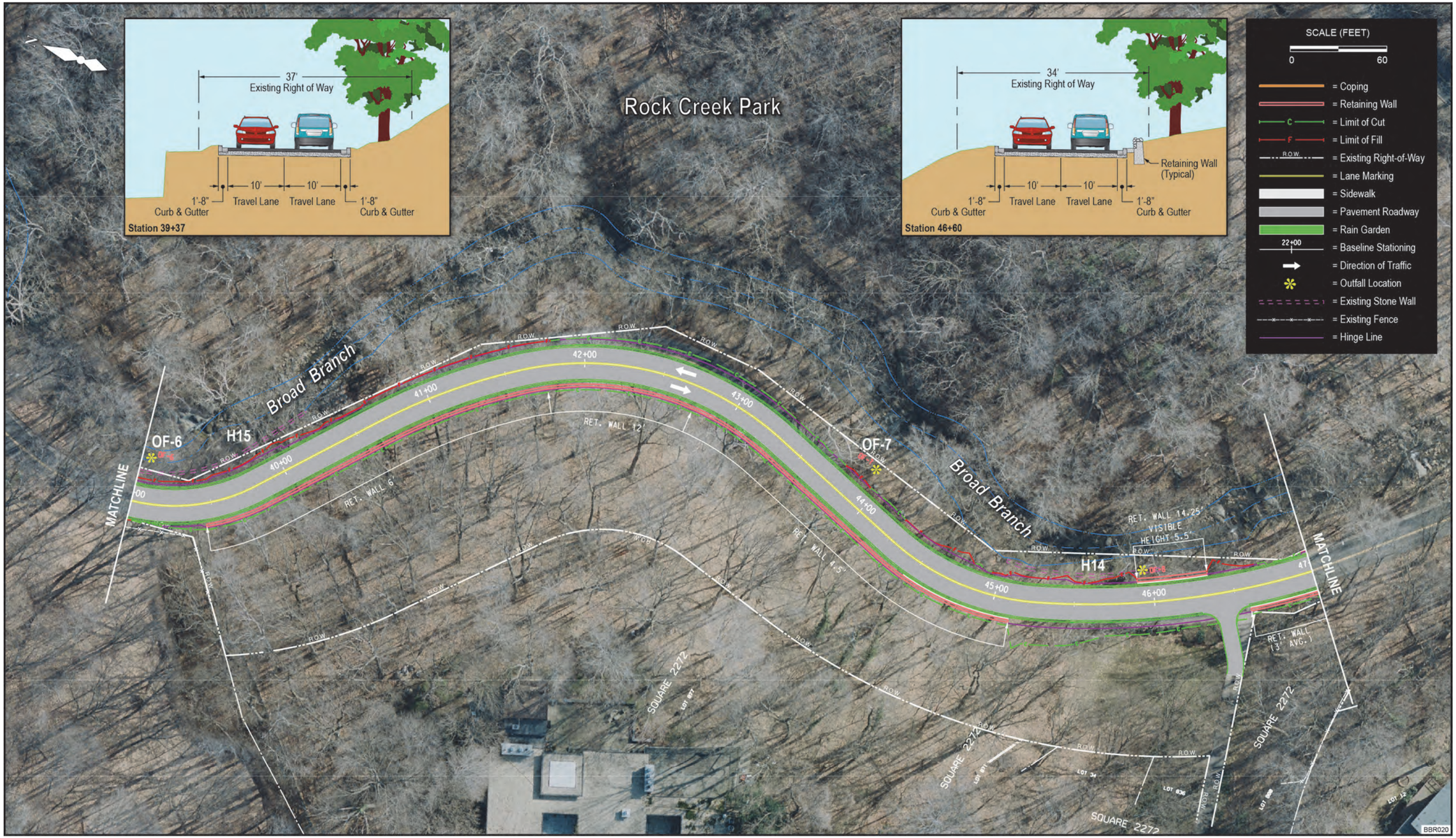


Figure B-2. Alternative 2
Option A
(Sheet 10)

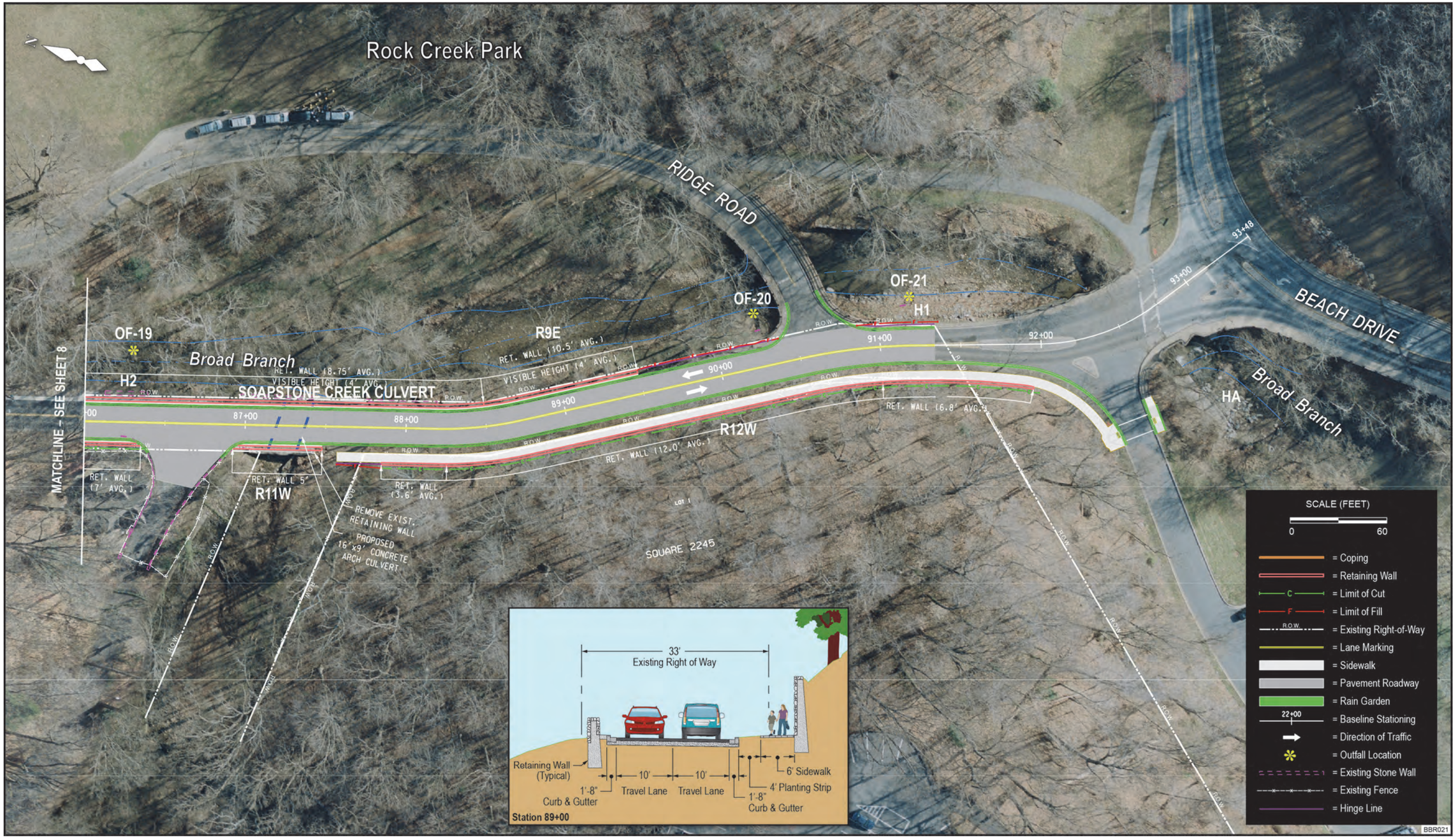


Figure B-2. Alternative 2 Option B
(Sheet 11)

Figure B-3. Alternative 3
(Sheet 1)

Figure B-3. Alternative 3
(Sheet 2)

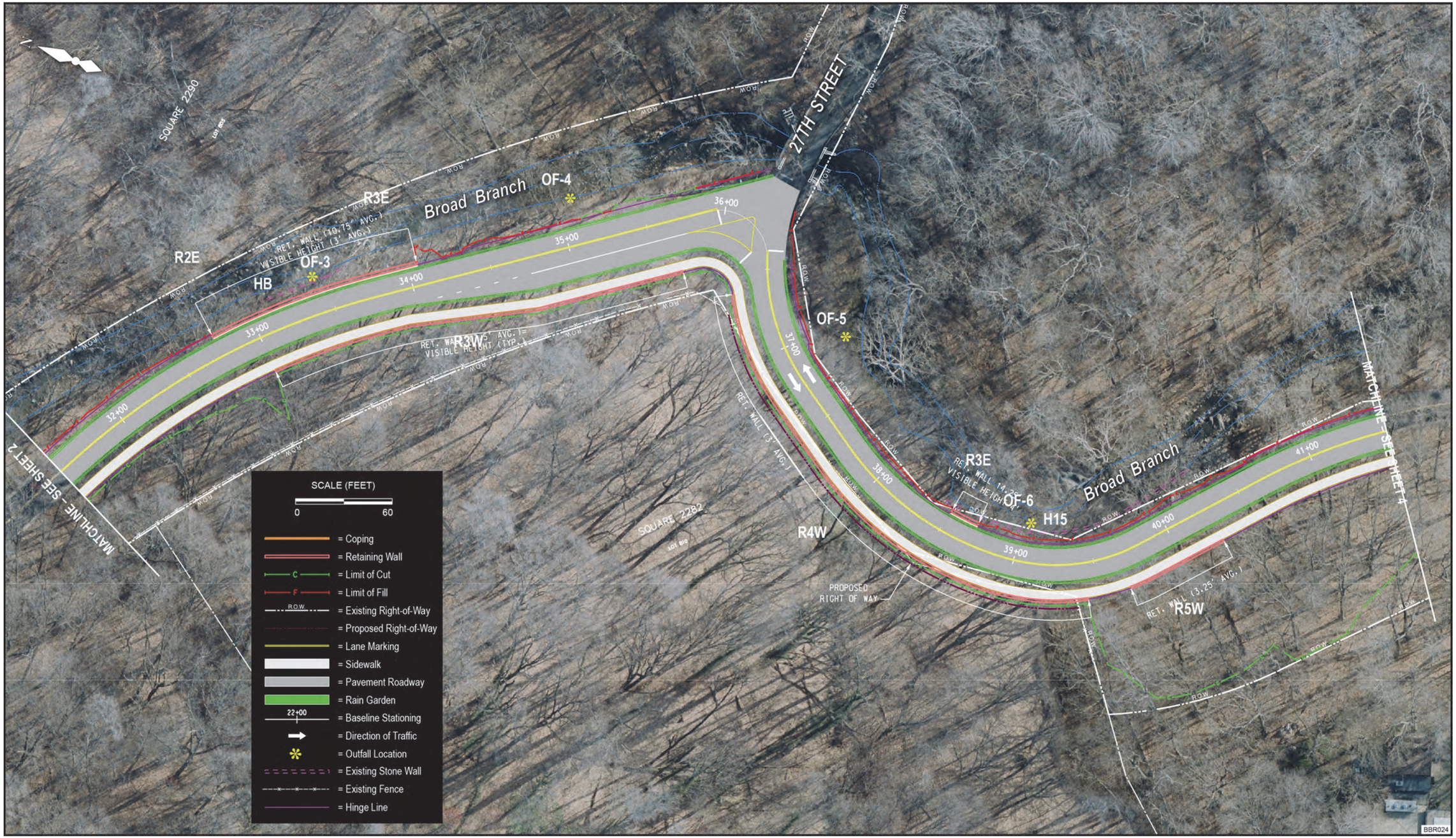


Figure B-3. Alternative 3
(Sheet 3)

Figure B-3. Alternative 3
(Sheet 4)

Figure B-3. Alternative 3
(Sheet 5)

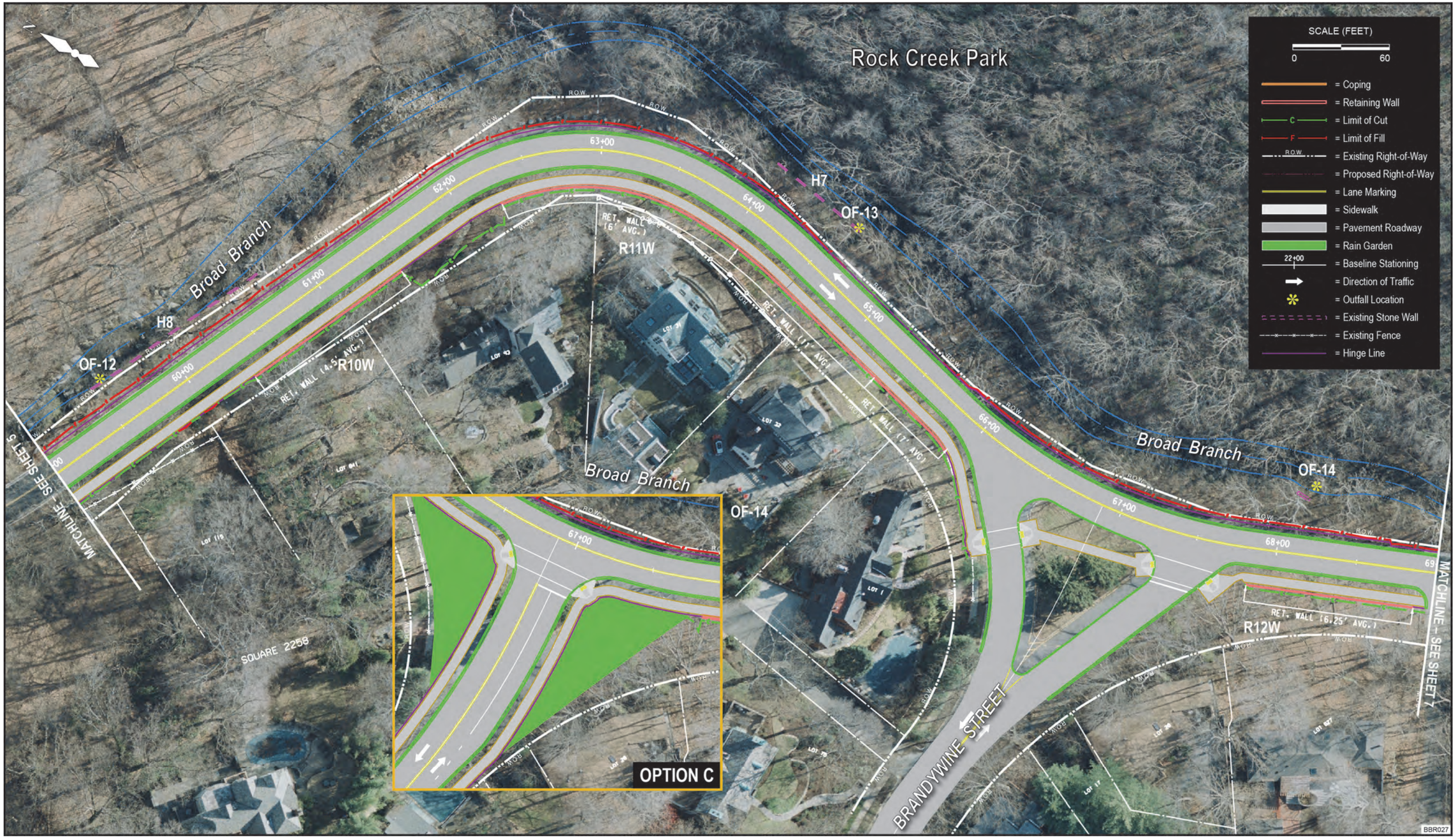


Figure B-3. Alternative 3
(Sheet 6)

Figure B-3. Alternative 3
(Sheet 7)

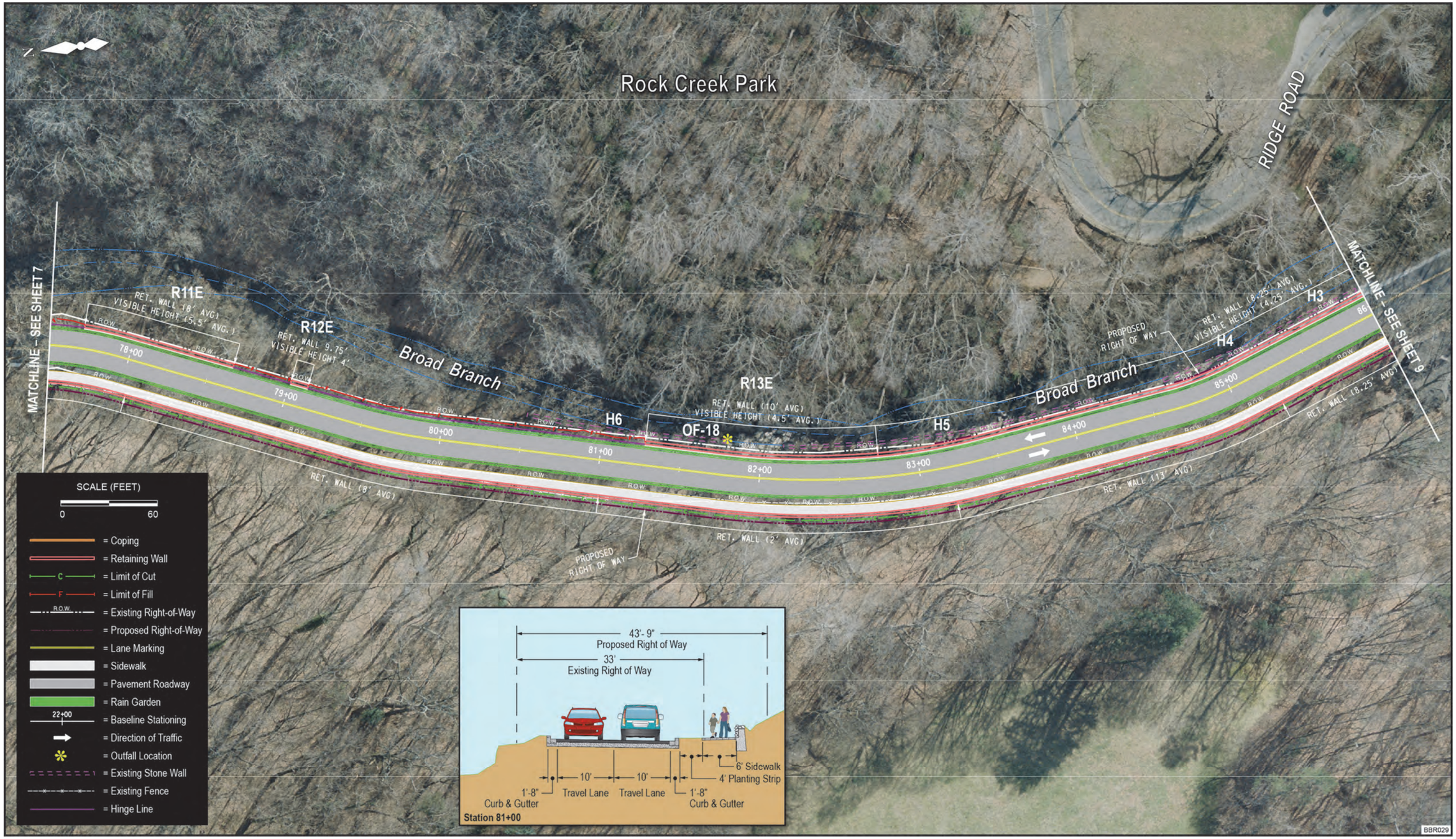


Figure B-3. Alternative 3
(Sheet 8)

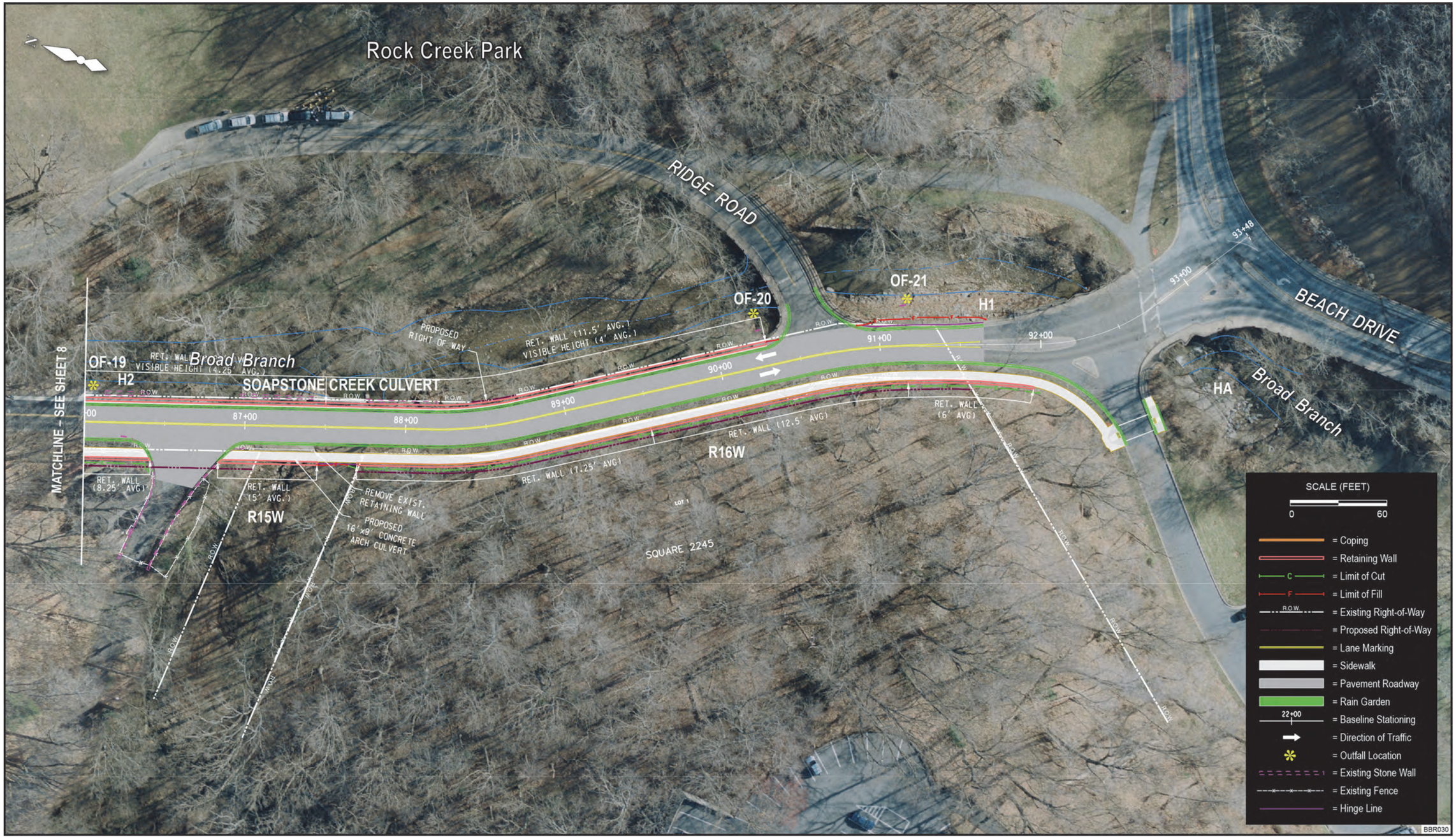


Figure B-3. Alternative 3
(Sheet 9)

Figure B-4. Alternative 4
(Sheet 1)

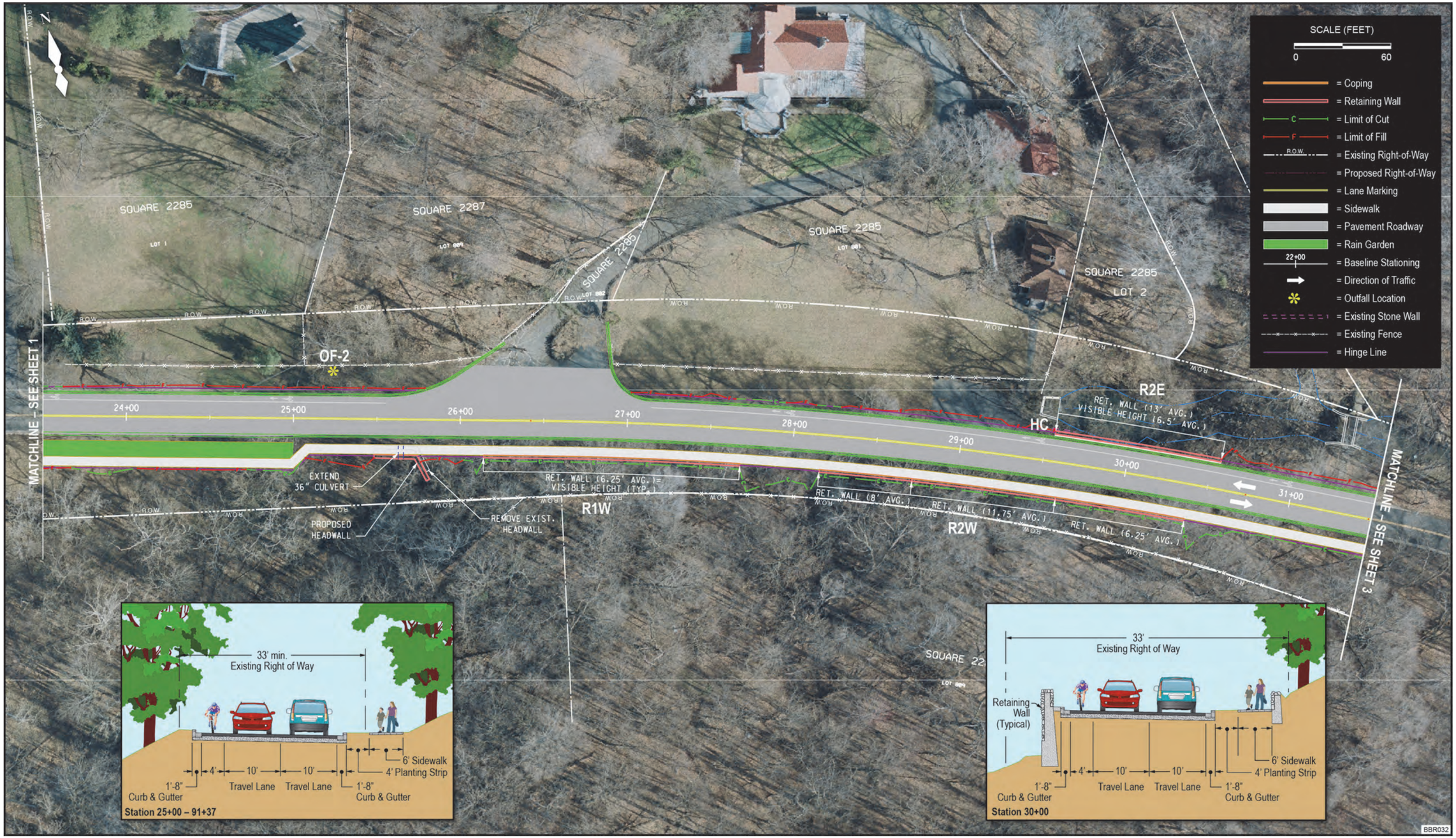


Figure B-4. Alternative 4
(Sheet 2)

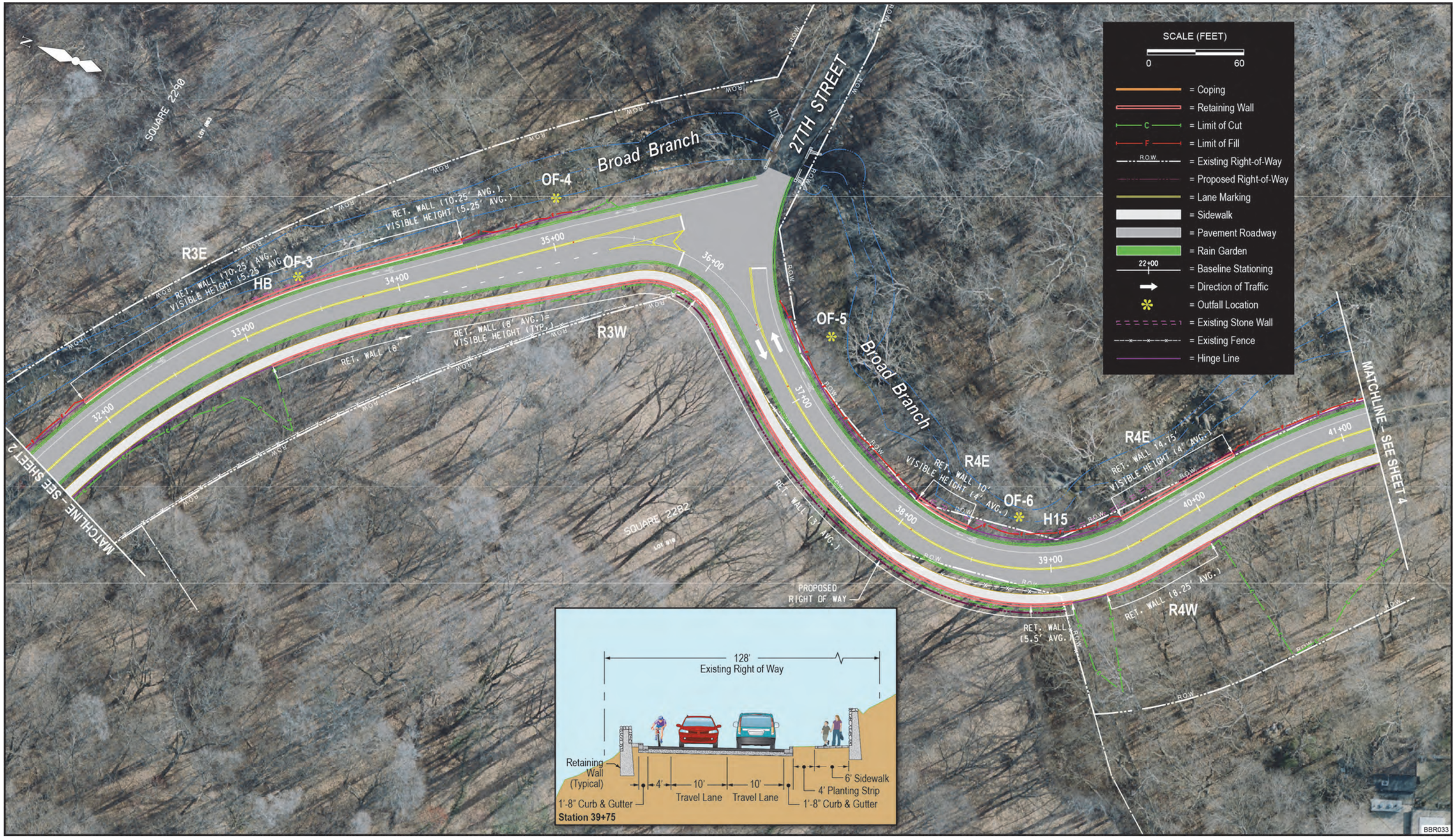


Figure B-4. Alternative 4
(Sheet 3)

Figure B-4. Alternative 4
(Sheet 4)

Figure B-4. Alternative 4
(Sheet 5)

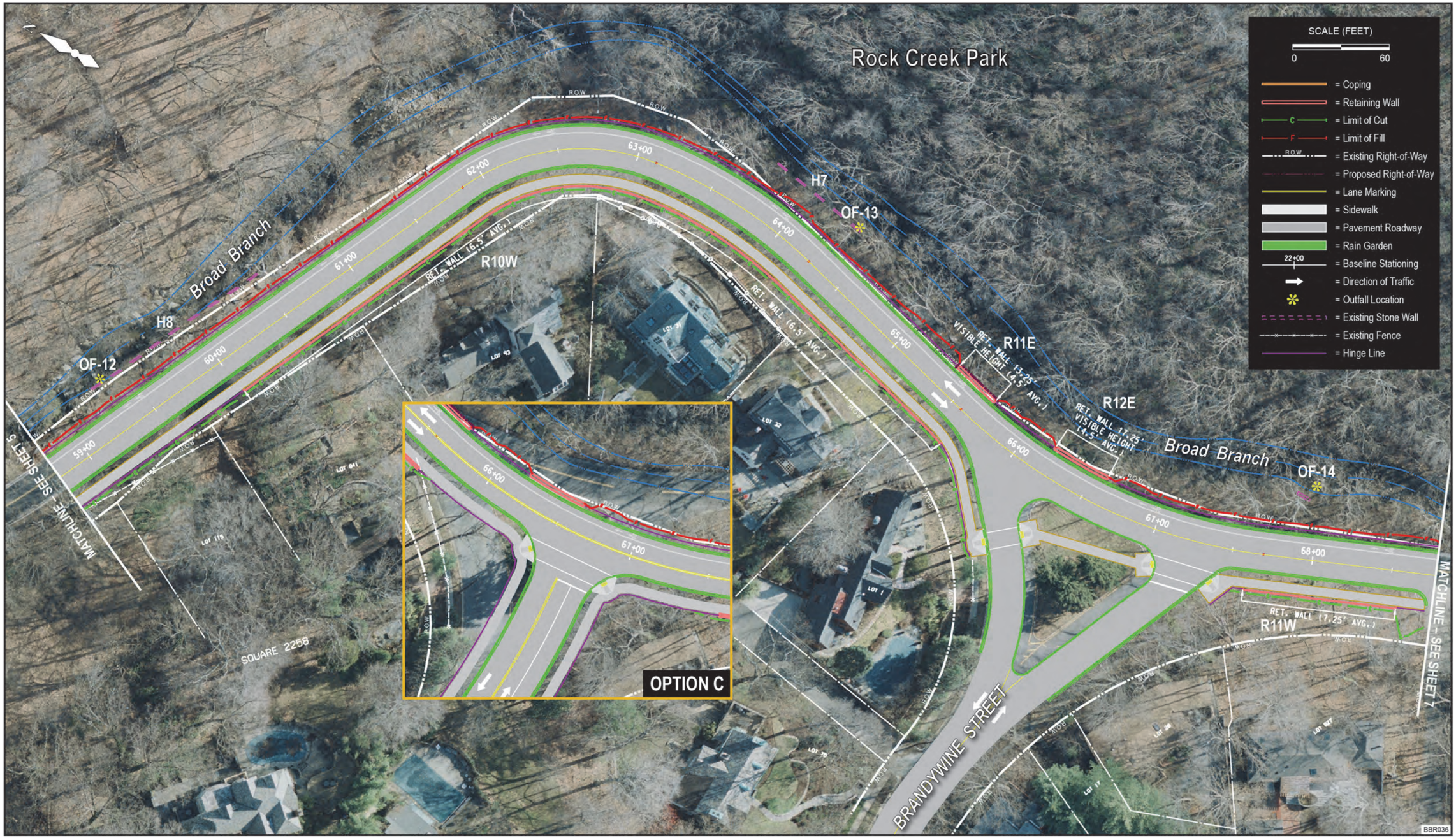


Figure B-4. Alternative 4
(Sheet 6)

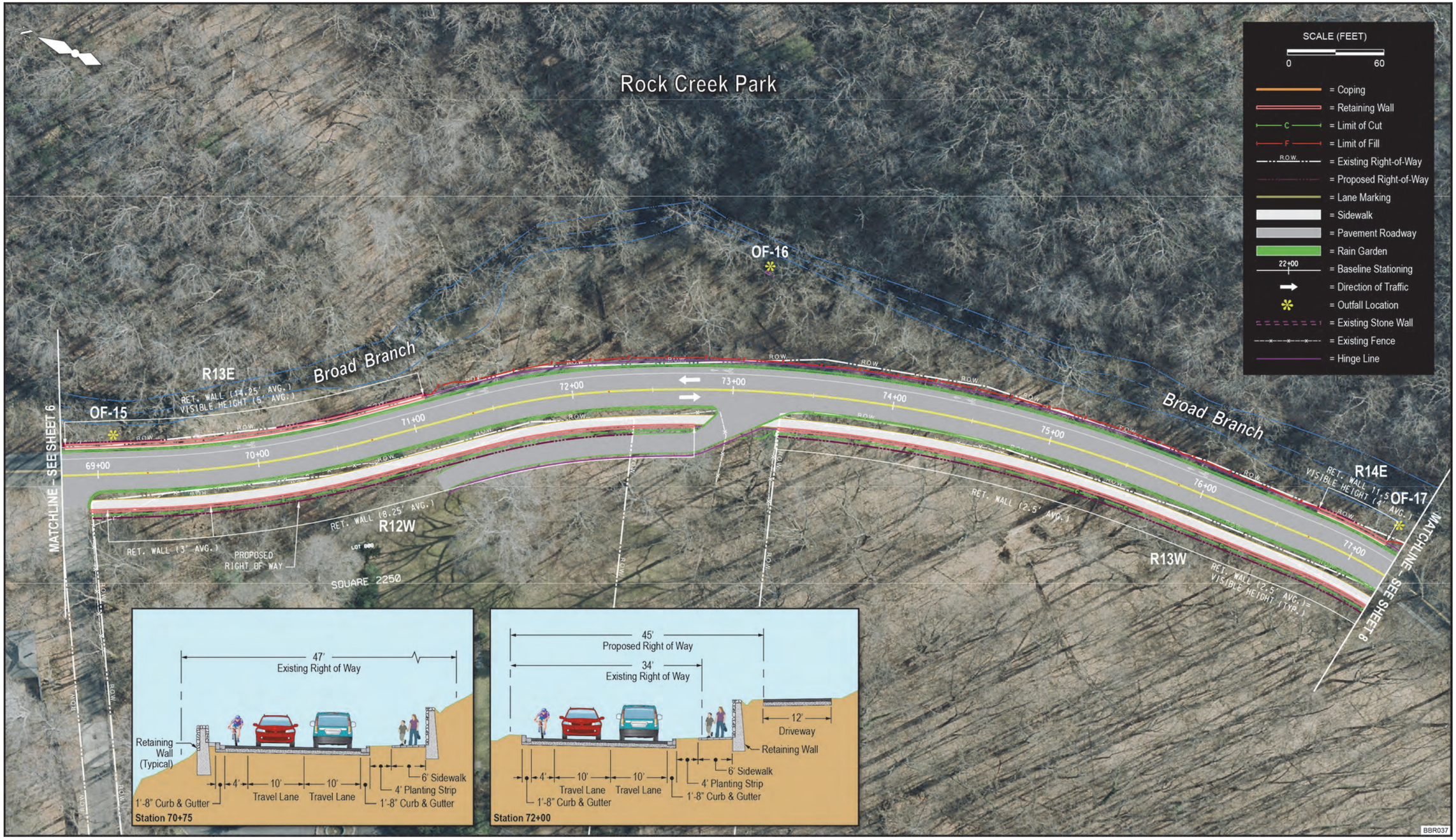


Figure B-4. Alternative 4
(Sheet 7)

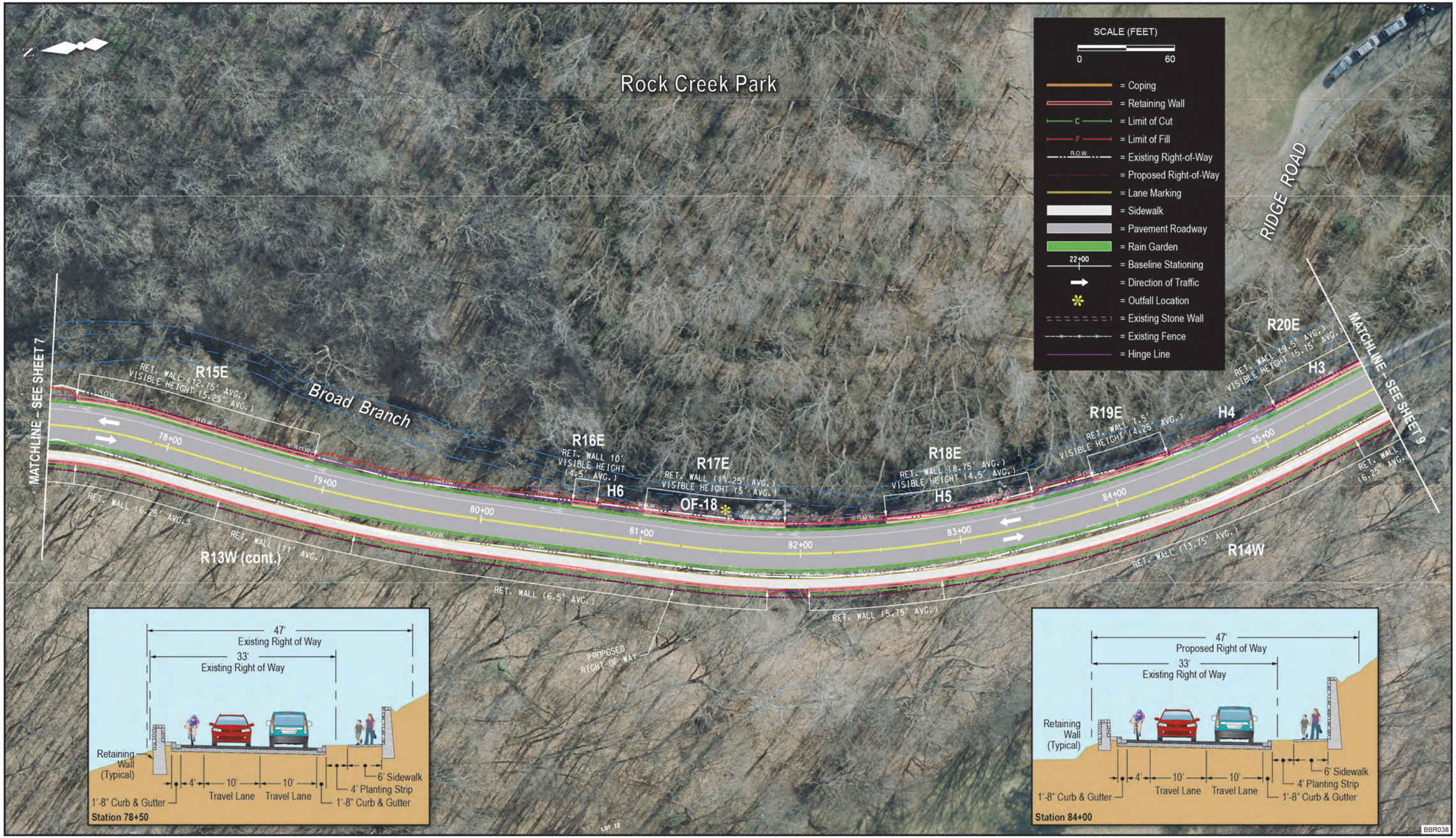


Figure B-4. Alternative 4
(Sheet 8)

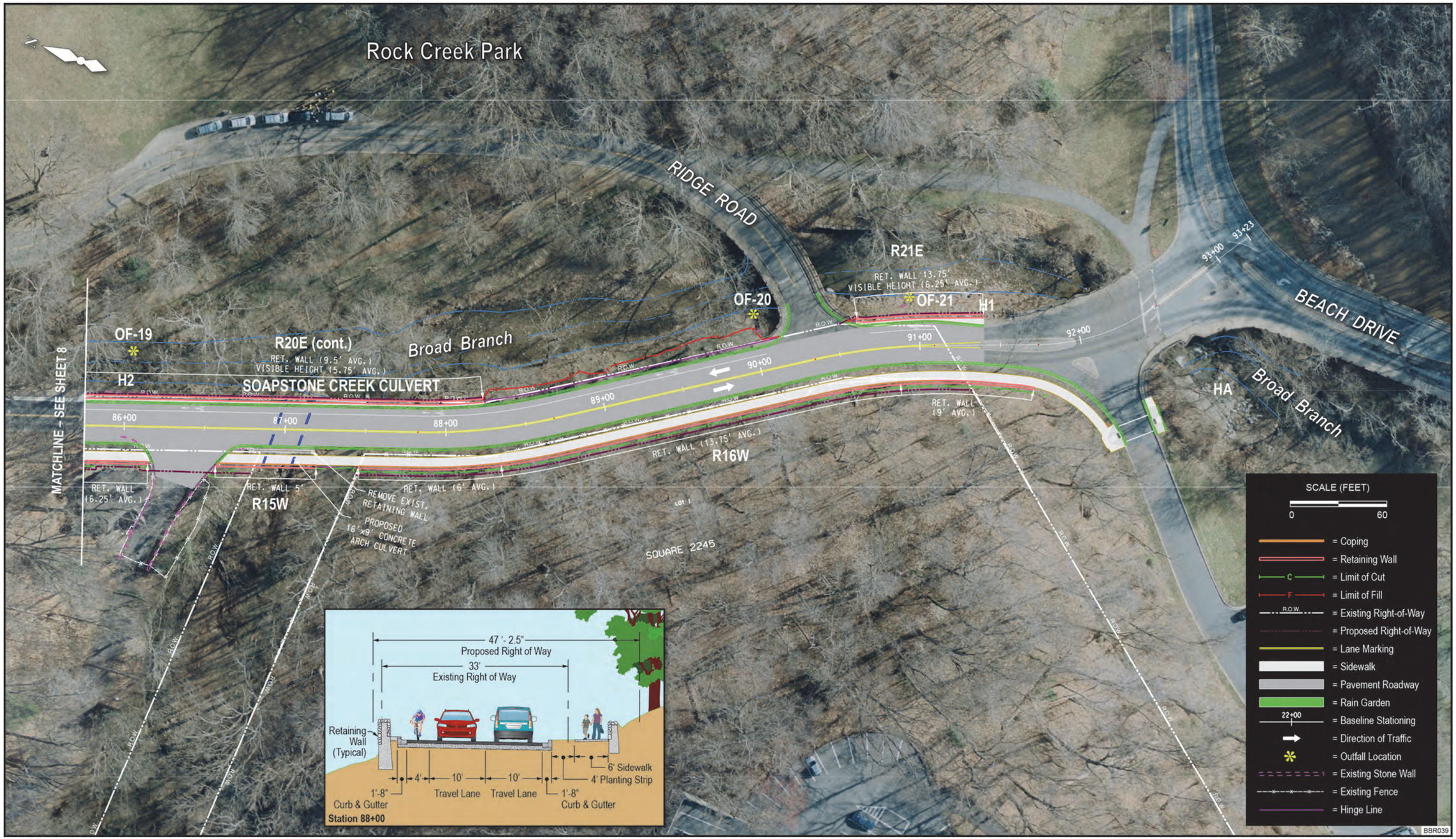


Figure B-4. Alternative 4
(Sheet 9)

C PROJECT COST ESTIMATE ASSUMPTIONS AND EXCLUSIONS

In support of the alternatives development process, preliminary cost estimates were prepared for each of the three Candidate Build Alternatives. These cost estimates were based upon the conceptual level designs developed for the preliminary alignments, and associated profile and typical sections of Broad Branch Road.

The project limits have been identified as Linnean Avenue/32nd Street at the north end to 100 feet south of Ridge Road at the south end — a length of approximately 7,675 feet or 1.5 miles. The proposed improvements do not seek to increase capacity; therefore, each of the alternatives retains the existing two-lane configuration. All roadway improvements will be restricted to the DDOT-owned right-of-way for Candidate Build Alternative 2. Additional right-of-way will be required for Options A and B under Candidate Build Alternative 2 as well as for Candidate Build Alternatives 3 and 4. Construction easements would be necessary for the installation of some erosion and sediment control measures, and in and around the areas near existing outfalls within National Park Service property, to minimize erosion and to create safe access points for future maintenance.

Costs have been developed at a conceptual level for both "TOTAL CONSTRUCTION COST" for the construction effort under a traditional Design-Bid-Build approach, and "TOTAL PROJECT COST", which includes funding for design and construction management,

Table C-1 summarizes these cost estimates.

Table C-1. Conceptual Level Cost Estimate

ALTERNATIVE	TOTAL CONSTRUCTION COST	DDOT PROGRAM MANAGEMENT COST[1]	TOTAL PROJECT COST
Alternative 2	$21,459,000	$7,510,000	$28,969,000
Alternative 3	$25,369,000	$8,879,150	$34,248,150
Alternative 4	$27,464,000	$9,612,400	$37,076,400

[1]DDOT Program Management Cost estimated to be 35% of the Total Construction Cost, broken down as follows: 1% for Public Relations/Agency Coordination/Misc.; 6% for Construction Escalation (2 years at 3% per year); 12% Final Design Fee; 16% Construction Management.

ASSUMPTIONS

The following assumptions were made in support of the construction cost estimates:

ROADWAY

1. Complete reconstruction of the roadway with the following:

a) Travel Lanes and Bike Lanes – 2″ Superpave AC Surface Course, 5″ Superpave AC Base Course, 6″ Graded Aggregate Base Course (GAB)
b) Curb and Curb & Gutter – Combined 8″ wide PCC curb and 12″ wide PCC gutter
c) Driveways – Concrete Driveway - 7″ PCC; Asphalt Driveway 4″ AC , 4″ GAB

2. Sidewalks with the following :

a) Sidewalk – 4″ PCC, 4″ Graded Aggregate Base Course (GAB)

UTILITIES

1. DC Water – Water and Sewer Relocations: Based on communications with DC Water design staff, the water and sewer lines are considered for relocation if the existing line falls within 1 foot of the curb/curb & gutter line; if the line falls within swale/ditch alignment; if the depth of cover is reduced to less than 3 feet; if the line falls underneath the wheelchair/bicycle ramp; or if the line falls within the footprint of other utilities.

2. PEPCO, VERIZON, and COMCAST – It is assumed that all overhead lines are on joint-use PEPCO poles and if PEPCO lines are impacted then they all need to be relocated. PEPCO lines are considered for relocation if the existing poles fall within the footprint of the roadway or excavation takes place within 1 foot. Some of the existing poles are outside of the right-of-way and they will remain as they are.

3. WASHINGTON GAS – Gas lines are considered for relocation if the existing line falls within 1 foot of the curb/curb & gutter line; if the line falls within swale/ditch alignment; if the depth of cover is reduced to less than 3 feet; the line falls underneath the wheelchair/bicycle ramp; or within the foot print of other utilities.

4. DC STREETLIGHT - Existing street lights are assumed to be DC-owned, leased lights on PEPCO poles. All existing old type light fixtures and arms will be replaced with new 250 Watt High Pressure Sodium Luminaries cut-off type fixtures with 8-, 12- or 14-foot arms.

STORMWATER / DRAINAGE

1. In general, the roadway will have a normal cross slope and runoff will be directed toward the curb and collected in drainage systems to be installed on the east and west sides of the roadway. Water collected in the system will be directed to existing outfall locations along the east side of the roadway.

2. Cross culverts will be used along the Broad Branch Road, where it is necessary and feasible, to prevent the offsite runoff from entering the roadway and to divert it to the existing outfalls.

3. For Candidate Build Alternatives 2, 3, and 4, concrete ditches behind the retaining walls would direct the offsite runoff to the proposed drainage system.

4. Given the rolling topography of the project area, it is assumed that sufficient grades exist to enable new systems to outfall at the existing outfall inverts.

5. Water quality catch basins will be used, wherever feasible, to screen debris and filter sediment before discharging runoff to the existing outfalls.

6. Rain gardens will be incorporated on the west side of the roadway at the north end of project area and at the intersection with Brandywine Street using Low Impact Development (LID) techniques. The following features will be included in the rain gardens:

   a) A bioretention area will be located adjacent to the roadway to act as a filter, applying Best Management Practices (BMPs). Runoff from the roadway would flow to the bioretention area as sheet flow, where it would filter through the 2.5 to 4 ft thick layer of sand media and into perforated underdrain pipes surrounded by aggregate and geotextile to filter material before being discharged to the existing storm drain system through an inlet structure connected to the existing drain system.

   b) The inlet structure will also serve as an over flow structure to divert excess water out of the rain garden.

EXCLUSIONS

The following items were not included in the construction cost estimates:

1. Unforeseen subsurface condition
2. Stream stabilization
3. Right-of-way acquisition including temporary construction easements
4. Accuracy of the survey
5. Location of existing utilities

Table C-2. Conceptual Construction Cost Estimate – Alternative 2

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
GRAD	**GRADING**				
	COMMON EXCAVATION	CY	9,000	$30	$270,000
	HARD SURFACE PAVEMENT EXCAVATION	CY	6,250	$25	$156,250
	BORROW EMBANKMENT	CY	3,000	$35	$105,000
	STRUCTURAL EXCAVATION	CY	6,000	$50	$300,000
	UNDERCUT	CY	12,500	$50	$625,000
	SUBGRADE STABILIZATION	CY	12,500	$40	$500,000
RDWY	**ROADWAY**				
	FULL-DEPTH ASPHALT PAVEMENT (2" HMA SURFACE COURSE+5" HMA BASE COURSE+6" GAB)	SY	18,720	$58	$1,085,760
	ASPHALT DRIVEWAY (4" HMA + 4" GAB)	SY	550	$47	$25,850
	7" PCC DRIVEWAY	SY	160	$90	$14,400
	PCC SIDEWALK (4" PCC +4" GAB)	SY	1,390	$75	$104,250
	PCC WHEELCHAIR RAMPS (7" PCC)	EA	2	$400	$800
	STANDARD CURB AND GUTTER	CY	750	$350	$262,500
STWM	**STORMWATER**				
	WATER QUALITY CATCH BASIN	EA	21	$9,000	$189,000
	CLOSED STORM DRAIN SYSTEM	LF	4,600	$150	$690,000
	OUTFALL IMPROVEMENTS	EA	21	$750	$15,750
	MANHOLES	EA	39	$6,000	$234,000
	CATCH BASINS	EA	60	$5,000	$300,000
	CULVERT (DRIVEWAY CROSSING)	EA	3	$5,500	$16,500
	CULVERT (BROAD BRANCH ROAD CROSSING)	EA	1	$12,000	$12,000
	PCC HEADWALL	EA	21	$3,000	$63,000
	RAIN GARDEN	SY	1,800	$160	$288,000
STRU	**STRUCTURES**				
	COPING WALL 8" to 18" HEIGHT	LF	473	$35	$16,555
	RETAINING WALL 1'-6" to 5' HEIGHT W/ SAFETY RAILING	LF	1,885	$300	$565,500
	RETAINING WALL 5' to 10' HEIGHT W/ SAFETY RAILING	LF	1,551	$465	$721,215
	RETAINING WALL 10' to 15' HEIGHT W/ SAFETY RAILING	LF	887	$720	$638,640
	SOAPSTONE CREEK CULVERT REPLACEMENT (BRIDGE STRUCTURE)	LS	1	$250,000	$250,000
UTIL	**UTILITIES**				
	8" WATERMAIN REPLACEMENT	LF	265	$300	$79,500
	12" WATERMAIN REPLACEMENT	LF	225	$400	$90,000
	5" SANITARY SEWER REPLACEMENT	LF	85	$250	$21,250
	6" SANITARY SEWER REPLACEMENT	LF	50	$250	$12,500
	10" SANITARY SEWER REPLACEMENT	LF	141	$350	$49,350

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
	15" SANITARY SEWER REPLACEMENT	LF	100	$500	$50,000
	18" SANITARY SEWER REPLACEMENT	LF	4,200	$550	$2,310,000
	21" SANITARY SEWER REPLACEMENT	LF	500	$650	$325,000
	24" SANITARY SEWER REPLACEMENT	LF	425	$750	$318,750
	2" GASLINE REPLACEMENT	LF		$160	$0
	4" GASLINE REPLACEMENT	LF		$170	$0
	6" GASLINE REPLACEMENT	LF	810	$180	$145,800
	STREET LIGHT UPGRADING	LF		$10	$0
	PEPCO RELOCATIONS	LF	3,450	$50	$172,500
	VERIZON RELOCATIONS	LF	1,500	$40	$60,000
	COMCAST RELOCATION	LF		$20	$0
LASP	**LANDSCAPING**				
	TREE REMOVAL	EA	288	$300	$86,400
	NEW TREE - 2" DBH	EA	264	$400	$105,600
	TREE PRUNING	EA		$100	$0
	SEEDING/SODDING	SY	5,000	$6	$30,000
PMSG	**PAVEMENT MARKINGS AND SIGNING**				
	ROADWAY PAVEMENT MARKINGS	LF	16,070	$4	$64,280
	TRAFFIC SIGNS	SF	210	$50	$10,500
	TRAFFIC SIGN SUPPORTS	LF	460	$5	$2,300
				SUBTOTAL	**$11,383,700**
	MAINTENANCE OF TRAFFIC (25% OF SUBTOTAL)				$2,845,925
	MOBILIZATION (10% OF SUBTOTAL)				$1,138,370
	EROSION AND SEDIMENT CONTROL (10% OF SUBTOTAL)				$1,138,370
				NEW SUBTOTAL	**$16,506,365**
	CONTINGENCY (30% OF NEW SUBTOTAL)				$4,951,910
				TOTAL	**$21,458,275**
	TOTAL ESTIMATED CONSTRUCTION COST				**$21,459,000**

Table C-3. Conceptual Construction Cost Estimate – Alternative 3

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
GRAD	**GRADING**				
	COMMON EXCAVATION	CY	11,800	$30	$354,000
	HARD SURFACE PAVEMENT EXCAVATION	CY	6,300	$25	$157,500
	BORROW EMBANKMENT	CY	3,600	$35	$126,000
	STRUCTURAL EXCAVATION	CY	6,500	$50	$325,000
	UNDERCUT	CY	12,500	$50	$625,000
	SUBGRADE STABILIZATION	CY	12,500	$40	$500,000
RDWY	**ROADWAY**				
	FULL-DEPTH ASPHALT PAVEMENT (2" HMA SURFACE COURSE+5" HMA BASE COURSE+6" GAB)	SY	18,850	$58	$1,093,300
	ASPHALT DRIVEWAY (4" HMA + 4" GAB)	SY	630	$47	$29,610
	7" PCC DRIVEWAY	SY	360	$90	$32,400
	PCC SIDEWALK (4" PCC +4" GAB)	SY	5,580	$75	$418,500
	PCC WHEELCHAIR RAMPS (7" PCC)	EA	32	$400	$12,800
	STANDARD CURB	CY	4	$270	$1,080
	STANDARD CURB AND GUTTER	CY	880	$350	$308,000
STWM	**STORMWATER**				
	WATER QUALITY CATCH BASIN	EA	19	$9,000	$171,000
	CLOSED STORM DRAIN SYSTEM	LF	4,700	$150	$705,000
	OUTFALL IMPROVEMENTS	EA	21	$750	$15,750
	MANHOLE	EA	46	$6,000	$276,000
	CULVERT (DRIVEWAY CROSSING)	EA	3	$5,500	$16,500
	CULVERT (BROAD BRANCH ROAD CROSSING)	EA	1	$12,000	$12,000
	PCC HEADWALL	EA	21	$3,000	$63,000
	RAIN GARDEN	SY	1,800	$160	$288,000
	CATCH BASIN	EA	54	$5,000	$270,000
STRU	**STRUCTURES**				
	COPING WALL 8" to 18" HEIGHT	LF	92	$35	$3,220
	RETAINING WALL 1'-6" to 5' HEIGHT W/ SAFETY RAILING	LF	1,238	$300	$371,400
	RETAINING WALL 5' to 10' HEIGHT W/ SAFETY RAILING	LF	3,006	$465	$1,397,790
	RETAINING WALL 10' to 15' HEIGHT W/ SAFETY RAILING	LF	1,567	$720	$1,128,240
	RETAINING WALL 15' to 20' HEIGHT W/ SAFETY RAILING	LF	383	$950	$363,850
	SOAPSTONE CREEK CULVERT REPLACEMENT (BRIDGE STRUCTURE)	LS	1	$300,000	$300,000
UTIL	**UTILITIES**				
	8" WATERMAIN REPLACEMENT	LF	265	$300	$79,500
	12" WATERMAIN REPLACEMENT	LF	225	$400	$90,000

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
	5" SANITARY SEWER REPLACEMENT	LF	85	$250	$21,250
	6" SANITARY SEWER REPLACEMENT	LF	50	$250	$12,500
	10" SANITARY SEWER REPLACEMENT	LF	106	$350	$37,100
	15" SANITARY SEWER REPLACEMENT	LF	100	$500	$50,000
	18" SANITARY SEWER REPLACEMENT	LF	4,150	$550	$2,282,500
	21" SANITARY SEWER REPLACEMENT	LF	400	$650	$260,000
	24" SANITARY SEWER REPLACEMENT	LF	500	$750	$375,000
	2" GASLINE REPLACEMENT	LF		$160	$0
	4" GASLINE REPLACEMENT	LF		$170	$0
	6" GASLINE REPLACEMENT	LF	810	$180	$145,800
	STREET LIGHT UPGRADING	LF		$10	$0
	PEPCO RELOCATIONS	LF	3,700	$50	$185,000
	VERIZON RELOCATIONS	LF	1,800	$40	$72,000
	COMCAST RELOCATION	LF		$20	$0
LASP	**LANDSCAPING**				
	TREE REMOVAL	EA	465	$300	$139,500
	NEW TREE - 2" DBH	EA	465	$400	$186,000
	TREE PRUNING	EA	50	$100	$5,000
	SEEDING/SODDING	SY	12,500	$6	$75,000
PMSG	**PAVEMENT MARKINGS AND SIGNING**				
	ROADWAY PAVEMENT MARKINGS	LF	16,070	$4	$64,280
	TRAFFIC SIGNS	SF	210	$50	$10,500
	TRAFFIC SIGN SUPPORTS	LF	460	$5	$2,300
				SUBTOTAL	**$13,458,170**
	MAINTENANCE OF TRAFFIC (25% OF SUBTOTAL)				$3,364,543
	MOBILIZATION (10% OF SUBTOTAL)				$1,345,817
	EROSION AND SEDIMENT CONTROL (10% OF SUBTOTAL)				$1,345,817
				NEW SUBTOTAL	**$19,514,347**
	CONTINGENCY (30% OF NEW SUBTOTAL)				$5,854,304
				TOTAL	**$25,368,650**
	TOTAL ESTIMATED CONSTRUCTION COST				**$25,369,000**

Table C-4. Conceptual Construction Cost Estimate – Alternative 4

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
GRAD	**GRADING**				
	COMMON EXCAVATION	CY	6,000	$30	$180,000
	HARD SURFACE PAVEMENT EXCAVATION	CY	6,300	$25	$157,500
	BORROW EMBANKMENT	CY	3,000	$35	$105,000
	STRUCTURAL EXCAVATION	CY	8,050	$50	$402,500
	UNDERCUT	CY	12,500	$50	$625,000
	SUBGRADE STABILIZATION	CY	12,500	$40	$500,000
RDWY	**ROADWAY**				
	FULL-DEPTH ASPHALT PAVEMENT (2" HMA SURFACE COURSE+5" HMA BASE COURSE+6" GAB)	SY	22,500	$58	$1,305,000
	ASPHALT DRIVEWAY (4" HMA + 4" GAB)	SY	570	$47	$26,790
	7" PCC DRIVEWAY	SY	350	$90	$31,500
	PCC SIDEWALK (4" PCC +4" GAB)	SY	5,500	$75	$412,500
	PCC WHEELCHAIR RAMPS (7" PCC)	EA	32	$400	$12,800
	STANDARD CURB	CY	10	$270	$2,700
	STANDARD CURB AND GUTTER	CY	880	$350	$308,000
STWM	**STORMWATER**				
	WATER QUALITY CATCH BASIN	EA	19	$9,000	$171,000
	CLOSED STORM DRAIN SYSTEM	LF	4,750	$150	$712,500
	OUTFALL IMPROVEMENTS	EA	21	$750	$15,750
	MANHOLE	EA	46	$6,000	$276,000
	CULVERT (DRIVEWAY CROSSING)	EA	3	$5,500	$16,500
	CULVERT (BROAD BRANCH ROAD CROSSING)	EA	1	$12,000	$12,000
	PCC HEADWALL	EA	21	$3,000	$63,000
	RAIN GARDEN	SY	1,800	$160	$288,000
	CATCH BASIN	EA	54	$5,000	$270,000
STRU	**STRUCTURES**				
	COPING WALL 8" to 18" HEIGHT	LF	0	$35	$0
	RETAINING WALL 1'-6" to 5' HEIGHT W/ SAFETY RAILING	LF	879	$300	$263,700
	RETAINING WALL 5' to 10' HEIGHT W/ SAFETY RAILING	LF	3,253	$465	$1,512,645
	RETAINING WALL 10' to 15' HEIGHT W/ SAFETY RAILING	LF	2,433	$720	$1,751,760
	RETAINING WALL 15' to 20' HEIGHT W/ SAFETY RAILING	LF	460	$950	$437,000
	SOAPSTONE CREEK CULVERT REPLACEMENT (BRIDGE STRUCTURE)	LS	1	$350,000	$350,000
UTIL	**UTILITIES**				
	8" WATERMAIN REPLACEMENT	LF	265	$300	$79,500
	12" WATERMAIN REPLACEMENT	LF	225	$400	$90,000

ITEM NO.	ITEM DESCRIPTION	UNITS	QUANTITY	UNIT COST	AMOUNT
	5" SANITARY SEWER REPLACEMENT	LF	85	$250	$21,250
	6" SANITARY SEWER REPLACEMENT	LF	50	$250	$12,500
	10" SANITARY SEWER REPLACEMENT	LF	106	$350	$37,100
	15" SANITARY SEWER REPLACEMENT	LF	100	$500	$50,000
	18" SANITARY SEWER REPLACEMENT	LF	4,250	$550	$2,337,500
	21" SANITARY SEWER REPLACEMENT	LF	500	$650	$325,000
	24" SANITARY SEWER REPLACEMENT	LF	500	$750	$375,000
	2" GASLINE REPLACEMENT	LF		$160	$0
	4" GASLINE REPLACEMENT	LF		$170	$0
	6" GASLINE REPLACEMENT	LF	980	$180	$176,400
	STREET LIGHT UPGRADING	LF		$10	$0
	PEPCO RELOCATIONS	LF	6,000	$50	$300,000
	VERIZON RELOCATIONS	LF	1,300	$40	$52,000
	COMCAST RELOCATION	LF		$20	$0
LASP	**LANDSCAPING**				
	TREE REMOVAL	EA	460	$300	$138,000
	NEW TREE - 2" DBH	EA	460	$400	$184,000
	TREE PRUNING	EA	50	$100	$5,000
	SEEDING/SODDING	SY	11,000	$6	$66,000
PMSG	**PAVEMENT MARKINGS AND SIGNING**				
	ROADWAY PAVEMENT MARKINGS	LF	23,350	$4	$93,400
	PAVEMENT MARKINGS (BICYLE)	EA	50	$50	$2,500
	PAVEMENT MARKINGS (BICYLE ARROW)	EA	50	$50	$2,500
	TRAFFIC SIGNS	SF	210	$50	$10,500
	TRAFFIC SIGN SUPPORTS	LF	460	$5	$2,300
				SUBTOTAL	**$14,569,595**
	MAINTENANCE OF TRAFFIC (25% OF SUBTOTAL)				$3,642,399
	MOBILIZATION (10% OF SUBTOTAL)				$1,456,960
	EROSION AND SEDIMENT CONTROL (10% OF SUBTOTAL)				$1,456,960
				NEW SUBTOTAL	**$21,125,913**
	CONTINGENCY (30% OF NEW SUBTOTAL)				$6,337,774
				TOTAL	**$27,463,687**
	TOTAL ESTIMATED CONSTRUCTION COST				**$27,464,000**

D AREA OF POTENTIAL EFFECTS – CULTURAL RESOURCES

In accordance with Section 106 of the National Historic Preservation Act, the Area of Potential Effects (APE) for cultural resources was determined in consultation with the DC Historic Preservation Office. The APE represents the geographic area or areas within which an undertaking could cause changes in the character or use of historic properties, if any such exists.

The APE for archeological and architectural resources is shown on the following sheets. Approximate boundaries for National Park Service lands within or adjacent to the APE are shown on the same sheets.

Figure D-1. Area of Potential Effects
(Sheet 1)

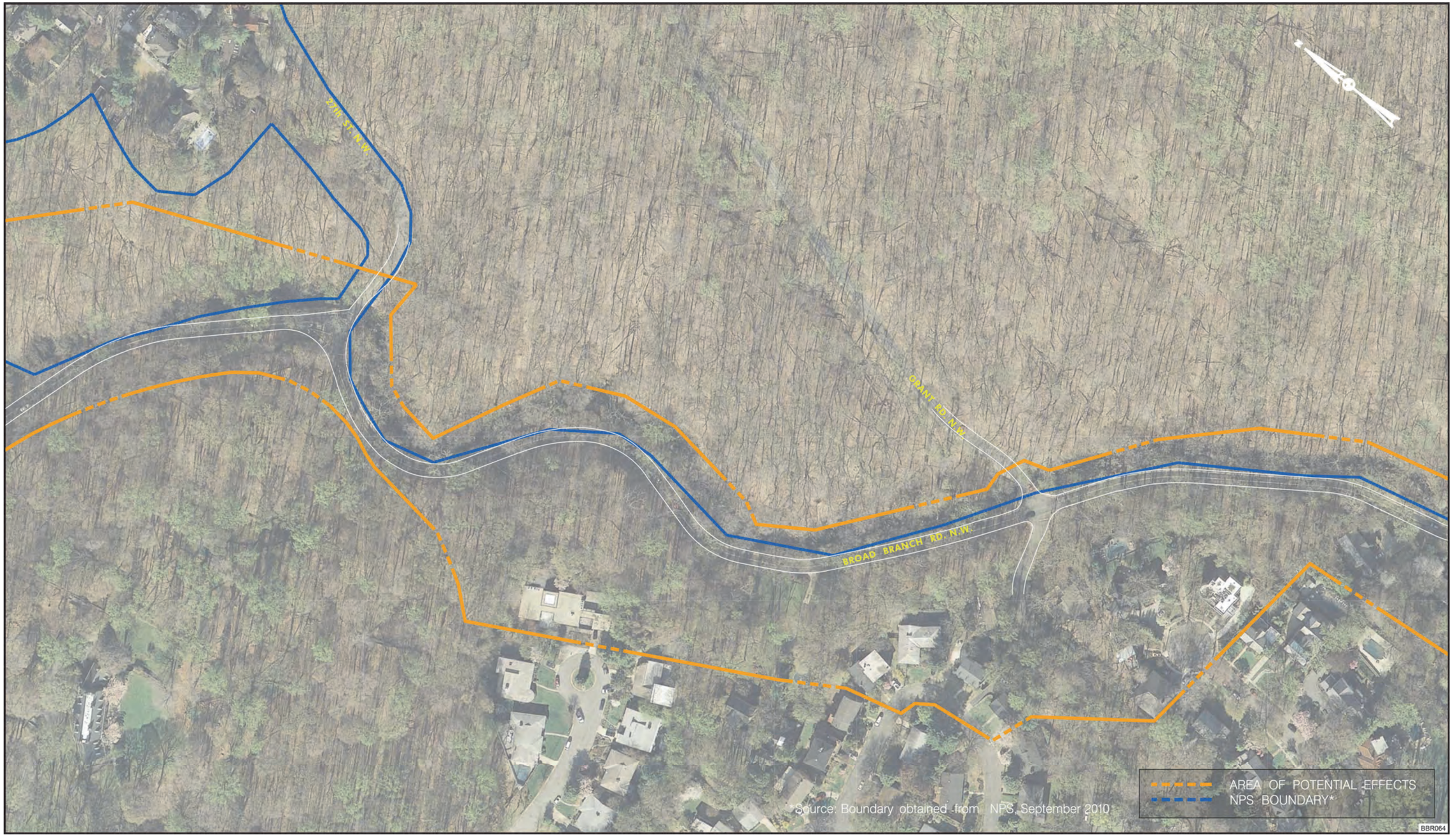


Figure D-1. Area of Potential Effects
(Sheet 2)

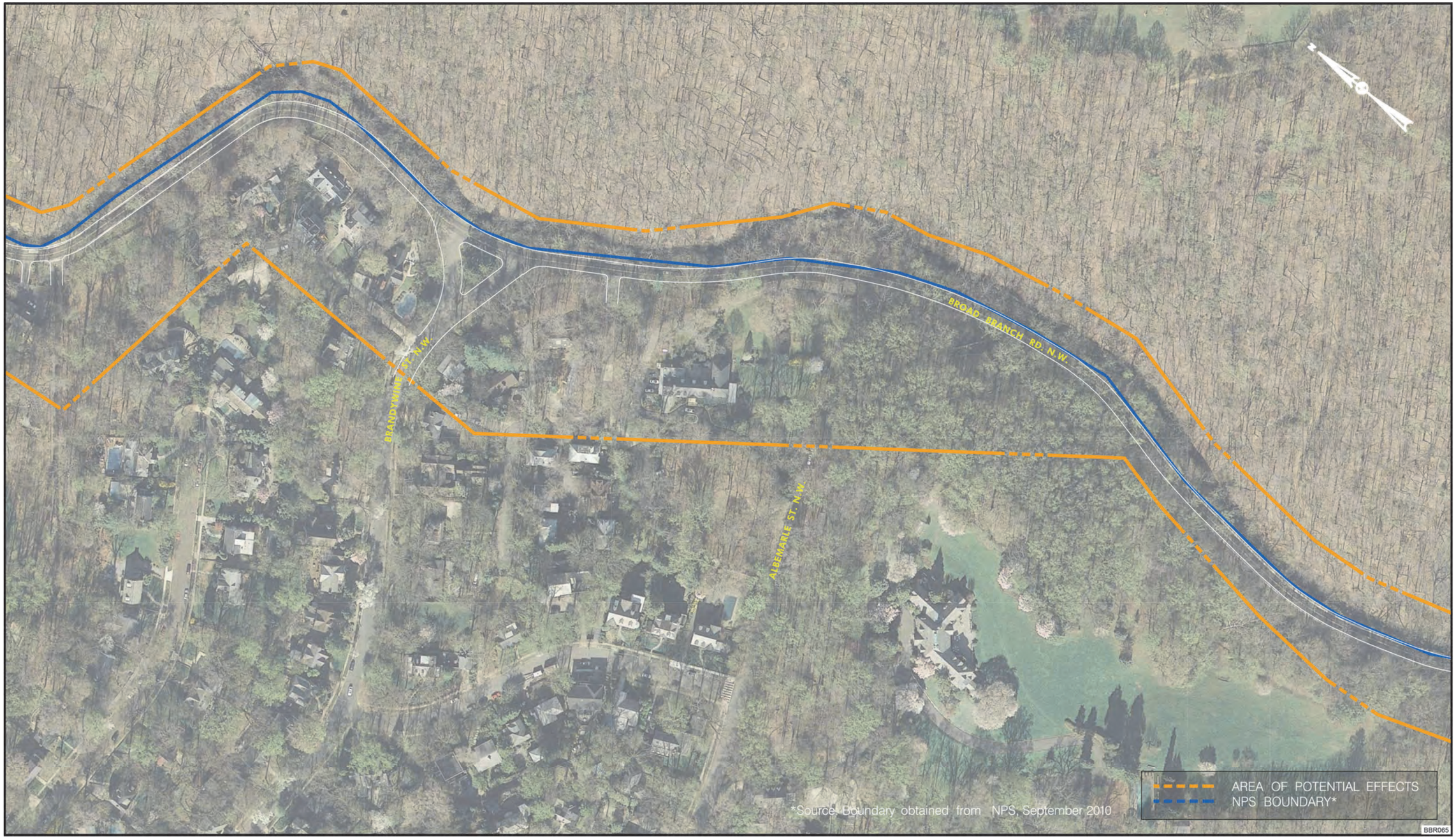


Figure D-1. Area of Potential Effects
(Sheet 3)

Figure D-1. Area of Potential Effects
(Sheet 4)

E DETOUR PLANS

During the reconstruction of Broad Branch Road, portions of the roadway would be closed to all but local and emergency vehicle traffic due to the limited right-of-way and narrow roadway. Therefore, in order to minimize impacts, it is recommended that reconstruction occur in four phases, as presented in **Table E-1**. Potential detour plans are described below for illustrative purposes; actual maintenance of traffic (MOT) and detour plans will be developed during final design.

Table E-1. Construction Phasing / Maintenance of Traffic

	LOCATION	ANTICIPATED DETOUR ROUTE	CONSTRUCTION DURATION
1	Linnean Avenue to 27th Street	Linnean Avenue	6-9 months
2	27th Street to Grant Road	Linnean Avenue	6-9 months
3	Grant Road to Brandywine Street	Linnean Avenue	6-9 months
4	Brandywine Street to Beach Drive	Connecticut Avenue/Beach Drive	6-9 months

Location 1 - Traffic to and from the south destined for the section of Broad Branch Road north of 27th Street could detour via Davenport Street to Linnean Avenue (**Figure E-1**). Traffic north or west of the intersection with Linnean Avenue could either take Linnean Avenue south to Davenport Street, or take Nebraska Avenue to Connecticut Avenue south.

Location 2 - Travel around this section of construction would be very similar to the alternative route for Location 1 (**Figure E-2**). Traffic to and from the south destined to the section of Broad Branch Road north of 27th Street could detour via Davenport Street to Linnean Avenue north (see Figure E-1). Traffic north or west of the intersection with Linnean Avenue, or from 27th Street, could either take Linnean Avenue south to Davenport Street, or take Nebraska Avenue to Connecticut Avenue south.

Location 3 – Rerouted traffic in this location would be relatively short as traffic from either direction need only travel a few blocks to the west down Davenport and Brandywine Streets to Linnean Avenue for a short distance before returning to Broad Branch Road (**Figure E-3**).

Location 4 – Since there are no streets crossing over Soapstone Creek in this vicinity, traffic would be rerouted to Connecticut Street via Brandywine in the north and via West Beach Drive and Tilden Street in the south (**Figure E-4**).

Figure E-1. Potential Detour – Location 1

Figure E-2. Potential Detour – Location 2

Figure E-3. Potential Detour – Location 3

Figure E-4. Potential Detour – Location 4

F AGENCY SCOPING LETTERS

DDOT provided project introduction/scoping letters to the following twelve federal and local agencies on February 8, 2011 in advance of the first agency scoping meeting held on March 24, 2011:

- U.S. Commission of Fine Arts
- U.S. Department of the Army Corps of Engineers, Maryland Section Southern
- U.S. Department of the Interior - National Park Service
  - National Capital Region
  - Rock Creek Park
- U.S. Fish and Wildlife Service – Chesapeake Bay Field Office
- U.S. Environmental Protection Agency – Region III Office of Environmental Programs
- Federal Highway Administration – District of Columbia Division
- Metropolitan Washington Council of Governments
  - Transportation Planning
  - Environmental Programs
- National Capital Planning Commission
  - Executive Director
  - Urban Design and Plan Review
- District Department of the Environment
  - Water Quality Division
  - Stormwater Management Division
  - Parks and Recreation
  - Fisheries and Wildlife
  - Watershed Management
- District of Columbia Office of Planning
- Washington Metropolitan Area Transit Authority
- DC Water

A response to the initial scoping letter was sent February 15, 2011, by the District Department of Parks and Recreation (DPR), providing information on three parks in or near the project area.

On March 15, 2011, FHWA invited both the National Park Service (NPS) and National Capital Planning Commission (NCPC) to become Cooperating Agencies, working in conjunction with DDOT and FHWA, in the development of the Environmental Assessment. On April 8, 2011, NCPC declined to become a Cooperating Agency; NPS accepted the invitation on May 3, 2013.

An additional letter to the U.S. Fish and Wildlife Service (USFWS) – Chesapeake Bay Field Office was sent on April 18, 2013 requesting information, in accordance with Section 7 of the Endangered Species Act (ESA), on the presence of species federally listed or proposed for listing as threatened or endangered in the project area. USFWS responded in a letter dated May 28, 2013 indicating that no such species are present and no further consultation under Section 7 of the ESA is required for this project.

Letters to and from all agencies as part of early coordination are provided in the following appendix.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Ms. Sarah Batcheler
Architect, Shipstead-Luce Act
U.S. Commission of Fine Arts - National Building Museum
401 F Street, NW, Suite 312
Washington, DC 20001-2728

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Ms. Batcheler:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Thomas Luebeke
Secretary
U.S. Commission of Fine Arts - National Building Museum
401 F Street, NW, Suite 312
Washington, DC 20001-2728

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Luebeke:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Ms. Maria Teresi
Regulatory Project Manager, District of Columbia
U.S. Department of the Army
Corps of Engineers, Maryland Section Southern
CENAB-OP-RMS - Regulatory Branch
P.O. Box 1715
Baltimore, MD 21203-1715

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Ms. Teresi:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. David Hayes
Regional Planner and Transportation Liaison
U.S. Department of the Interior - National Park Service
National Capital Region (NCR)
1100 Ohio Drive, SW
Washington, DC 20242

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Hayes:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Joel Gorder
Regional Planning and Environmental Coordinator
U.S. Department of the Interior - National Park Service
National Capital Region (NCR)
1101 Ohio Drive, SW
Washington, DC 20243

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Gorder:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Peter May
Associate Regional Director, Lands, Resources, and Planning
U.S. Department of the Interior - National Park Service
National Capital Region (NCR)
1101 Ohio Drive, SW
Washington, DC 20243

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. May:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Ms. Cynthia Cox
Acting Superintendent
U.S. Department of the Interior - National Park Service
Rock Creek Parkway (ROCR)
3545 Williamsburg Lane, NW
Washington, DC 20008

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Ms. Cox:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Leopold Miranda
Field Supervisor
U.S. Fish and Wildlife Service - Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Miranda:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Ms. Barbara Rudnick
Region 3 NEPA Coordinator
U.S. Environmental Protection Agency
Region III - Office of Environmental Programs
1650 Arch Street
Philadelphia, PA 19103-2029

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Ms. Rudnick:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Joseph Lawson
Division Administrator
Federal Highway Administration - District of Columbia Division
1990 K St. NW, Suite 510
Washington, DC 20006

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Lawson:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Ronald Kirby
Director
Metropolitan Washington Council of Governments - Transportation Planning
777 N. Capitol Street, NE, Suite 300
Washington, DC 20002

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Kirby:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Stuart Freudburg
Director
Metropolitan Washington Council of Governments - Environmental Programs
778 N. Capitol Street, NE, Suite 301
Washington, DC 20003

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Freudburg:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Marcel C. Acosta
Executive Director
National Capital Planning Commission
401 9th Street, NW, Suite 500
Washington, DC 20004

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Acosta:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. David W. Levy
Director
National Capital Planning Commission - Urban Design and Plan Review
401 9th Street, NW, Suite 500
Washington, DC 20004

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Levy:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Tim Karikari
District Department of the Environment - Water Quality Division
1200 First Street, NE, 5th Floor
Washington, DC 20002

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Karikari:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Chinkuyu Adion
District Department of the Environment - Water Quality Division
1200 First Street, NE, 5th Floor
Washington, DC 20002

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Adion:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Dr. Christopher Tolu
District Department of the Environment - Stormwater Management Division
51 N Street, NE, 5th Floor
Washington, DC 20002

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Dr. Tolu:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Jesus Aguirre
Director
District Department of the Environment - Parks and Recreation
3149 16th Street, NW
Washington, DC 20010

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Aguirre:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Bryan King
District Department of the Environment - Fisheries and Wildlife
51 N Street, NE, 5th Floor
Washington, DC 20002

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. King:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Steve Saari
Watershed Protection Specialist
District Department of the Environment
1200 First Street, NE, 6th Floor
Washington, DC 20002

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Saari:

The District Department of Transportation (DDOT) is preparing an Environmental Assessment (EA) in The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Ms. Harriet Tregoning
Director
District of Columbia Office of Planning
1100 4th Street, SW, Suite E650
Washington, DC 20024

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Ms. Tregoning:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Gerald Francis
Deputy Gerneral Manager
Washington Metropolitan Area Transit Authority
600 5th Street, NW
Washington, DC 20001

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Francis:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. George Hawkins
General Manager
DC Water
5000 Overlook Drive
Washington, DC 20032

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Hawkins:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Ms. Jessica DeMoise
DC Water
5000 Overlook Drive
Washington, DC 20032

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Ms. DeMoise:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 8, 2011

Mr. Asi Jacob Bah
DC Water
5000 Overlook Drive
Washington, DC 20032

RE: Environmental Assessment & Section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Bah:

The District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive (see attached location map). The project will also include the assessment of historic resources in accordance with the Section 106 of the National Historic Preservation Act. The majority of proposed improvements would occur within the existing right-of-way and would address safety, stormwater management issues, and aging infrastructure. Please provide us any comments or suggestions you may have regarding this project that should be considered in the assessment of environmental and cultural resources.

Your input will allow us to comprehensively address all potential impacts as the process moves forward. If you have any questions, please feel free to contact me at faisal.hameed@dc.gov or Mr. Wayne Wilson, DDOT Project Manager for this project at wayne.wilson@dc.gov. We will be contacting your agency shortly for an interagency scoping meeting for the project.

Please mail your comments by March 8, 2011 to our consultant team Project Manager, Stephen Walter, c/o Parsons, 100 M Street, SE, Washington, DC 20003 (or you may e-mail them to Stephen.C.Walter@parsons.com or call 202-775-3380).

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Parks and Recreation

DPR

Ella Faulkner
Community Planner

February 15, 2011

Mr. Stephen Walter
Project Manager
c/o Parsons, 100 M Street, SE
Washington DC 20003

Re: Environmental Assessment and section 106 Evaluation
Broad Branch Road Rehabilitation, between Linnean Avenue and Beach Drive, NW
Washington, D.C.

Dear Mr. Walter:

The Department of Parks and Recreation (DPR) is pleased that the District Department of Transportation (DDOT) and the Federal Highway Administration are preparing an Environmental Assessment for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive. This proposed rehabilitation will significantly improve the aging infrastructure as well as address the current stormwater management issues.

DPR has within the vicinity of this rehabilitation corridor three (3) properties; Linnean Park, located at Linnean Avenue and Broad Branch Terrace N.W., and two triangle parks, respectively located at Nevada and Broad Branch Road. N.W. and Brandywine and Broad Branch Road N.W. It has been determined that the rehabilitation improvements along Broad Branch Road will have no effect on any of these DPR properties, therefore DPR has no issues with the scope of this Environmental Assessment.

If you have any questions, please feel free to contact me for clarification.

Sincerely,

Ella Faulkner
Community Planner

U.S. Department of Transportation
Federal Highway Administration

District of Columbia Division

1990 K Street, NW
Suite 510
Washington, DC 20006
(202) 219-3570

MAR 15 2011

Ms. Cynthia Cox
Acting Superintendant, Rock Creek Park
National Park Service
3545 Williamsburg Lane, NW
Washington, DC 20008

In Reply Refer To: HDA-DC

Dear Ms. Cox:

The Federal Highway Administration (FHWA), in conjunction with the District Department of Transportation (DDOT), is preparing an Environmental Assessment (EA) for the Broad Branch Road Project in accordance with the National Environmental Policy Act. The project will include an assessment of historic resources in accordance with Section 106 of the National Historic Preservation Act. The Broad Branch Road Project is located in Washington, DC, along Rock Creek Park, and extends between Linnean Avenue and Beach Drive. The purpose of the project is the reconstruction of Broad Branch Road between Linnean Avenue and Beach Drive due to operational deficiencies, safety, aging infrastructure, storm water management needs.

FHWA would like to invite NPS to become a cooperating agency in the development of the EA for the referenced project. Please respond in writing with an acceptance or denial of the invitation prior to April 15, 2011.

If you have any questions please contact Michael Hicks of my staff at (202) 219-3513 or by email: Michael.Hicks@dot.gov; or Faisal Hameed (DDOT Project Manager) at (202) 671-2326 or by email: Faisal.Hameed@dc.gov. Thank you for your cooperation and interest in this project.

Sincerely,

Pamela S Stephenson for

Joseph C. Lawson
Division Administrator

cc: Joel Gorder, Regional Transportation Liaison, NPS
Faisal Hameed, Chief, Project Development and Sustainability Division, DDOT

National Capital Planning Commission

Levy

IN REPLY REFER TO
NCPC File No. 7243

April 8, 2011

Mr. Joseph C. Lawson
Division Administrator
District of Columbia Division
Federal Highway Administration
1990 K Street, NW, Suite 510
Washington, DC 20006-1103

Re: Broad Branch Road Rehabilitation Environmental Assessment

Dear Mr. Lawson:

Thank you for extending the opportunity for the National capital Planning Commission to be a Cooperating Agency for the Broad Branch Road, NW Rehabilitation Environmental Assessment (EA). After reviewing the project description and attending the interagency scoping meeting held on March 24, 2011, NCPC staff has determined that the National Capital Planning Commission does not need to be a cooperating agency for the Environmental Assessment for this project.

NCPC will need to formally review this project, and will have an approval role if the project involves the use or disturbance of any federal land.

We look forward to working with the Federal Highway Administration as this project develops. If you have any questions please contact Carlton Hart at 202-482-7252 or carlton.hart@ncpc.gov.

Sincerely,

David W. Levy, RA, AICP
Director, Urban Design and Plan Review

United States Department of the Interior

NATIONAL PARK SERVICE
National Capital Region
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

May 3, 2013

Joseph Lawson, Division Administrator
U.S. Department of Transportation
Federal Highway Administration
1990 K Street, NW, Suite 510
Washington, D.C. 20006-1101

RE: Proposed Broad Branch Road Project

Dear Mr. Lawson,

We are writing regarding your 2011 letter about the preparation of an Environmental Assessment for the proposed Broad Branch Road reconstruction project. The National Park Service accepts your offer to participate as a Cooperating Agency, working in conjunction with the Federal Highway Administration and the District Department of Transportation.

Much of Broad Branch Road is immediately adjacent to National Park Service property that is managed by Rock Creek Park. This includes Broad Branch Creek, an important tributary of Rock Creek. Rock Creek Park also maintains and protects cultural resources along the proposed project site, including several historic walls, bridges, and culverts.

We look forward to participating in this important endeavor. If you have any questions or concerns, please contact Chief of Resources Management Nick Bartolomeo at 202-895-6010 or by email at nick_bartolomeo@nps.gov.

Sincerely,

Tara Morrison
Superintendent

CC: Cindy Cox, NPS-ROCR
Nick Bartolomeo, NPS-ROCR
Faisal Hameed, DDOT
Wayne Wilson, DDOT

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

Infrastructure Project Management Administration

April 18th, 2013

Mr. Trevor Clark
U.S. Fish and Wildlife Service - Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

RE: Request for species of concern information for the Broad Branch Road Project Environmental Assessment, Washington, DC

Dear Mr. Clark:

The Federal Highway Administration (FHWA) and District Department of Transportation (DDOT) are preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) for the rehabilitation of Broad Branch Road, between Linnean Avenue and Beach Drive, along the Rock Creek Park (see attached location map). The majority of proposed improvements would occur within the existing right-of-way and would address unsafe conditions due to severe drainage issues, aging infrastructure, poor lighting, lack of pedestrian access, and the tendency for drivers to exceed the posted speed limit. The EA will include: the documentation of the purpose and need for the project, identification of sensitive environmental resources, development of context-sensitive alternatives, evaluation of environmental impacts, evaluation of cultural/historical impacts, proposed minimization/mitigation measures, and stakeholder and agency coordination.

We request any information concerning federally-listed threatened or endangered plant or animal species and/or any unique habitat that may occur in the project area and whether a formal Section 7 consultation will be required.

Any comments or suggestions you may have regarding important factors that should be considered in the assessment of environmental and cultural resources located within the project area will allow us to comprehensively address all potential impacts as the process moves forward.

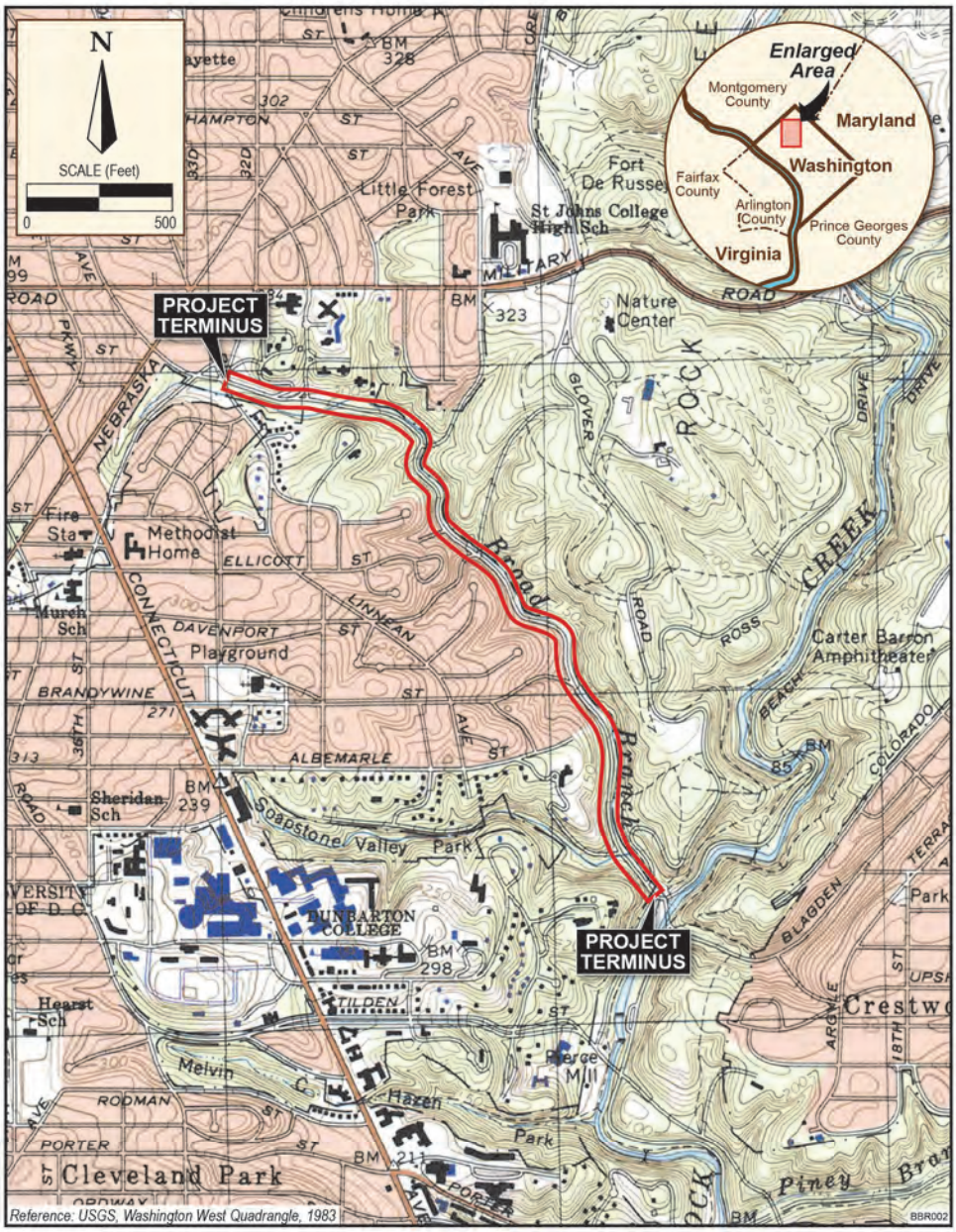
If you have any questions, please feel free to contact me at faisal.hameed@dc.gov

Sincerely,

Faisal Hameed
Manager
Project Development & Environmental Division
55 M Streets SE, Suite 500
Washington DC 20003

Cc: Wayne Wilson (DDOT), Mike Hicks (FHWA)

55 M Street SE, Suite 500, Washington DC 20003



Project Location
Environmental Assessment of Broad Branch Road
District Department of Transportation

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
http://www.fws.gov/chesapeakebay

May 28, 2013

Government of The District of Columbia
Department of Transportation
55 M Street SE, Suite 500
Washington, DC 20003

RE: Broad Branch Road Project Environmental Assessment, Washington, DC

Dear Faisal Hameed:

This responds to your letter, received April 18, 2013, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened in the above referenced project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no proposed or federally listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or should additional information on the distribution of listed or proposed species become available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. Limited information is currently available regarding the distribution of other rare species in the District of Columbia. However, the Nature Conservancy and National Park Service (NPS) have initiated an inventory of rare species within the District. For further information on such rare species, you should contact Tanya Shenk of the National Park Service at (970) 267-2193.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National

Bald Eagle Management Guidelines" dated May 2007.

If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle Management Guidelines can be found at: **http://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf**

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if alterations of wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Trevor Clark at (410) 573-4527.

Sincerely,

G. LaRouche

Genevieve LaRouche
Supervisor

G SECTION 106 CORRESPONDENCE

To comply with Section 106 of National Historic Preservation Act, DDOT conducted consultation with the District of Columbia State Historic Preservation Office (DC SHPO) and the Advisory Council on Historic Preservation (ACHP).

DDOT transmitted letters to both the DC SHPO and ACHP on February 24, 2011, informing them of the proposed project and their intent to initiate the Section 106 consultation process. On March 31, 2011, the ACHP responded by indicating that there was not yet enough information for them to consider participating and requesting that all future correspondence to them be initiated by the Federal Highway Administration (FHWA), as the lead federal agency in the Section 106 process.

The DC SHPO replied on April 5, 2011, to inform DDOT of potential resources located in the area, a list of which were forwarded to the project consultant team on March 29, 2011.

On August 25, 2011, DDOT provided a definition of the Area of Potential Effects (APE) with a map and formally requested concurrence with the APE from the DC SHPO.

On September 28, 2011 the DC SHPO concurred with the APE but indicated that further refinements may occur as additional information on the proposed project and potential impacts are determined. Information on previously identified historic properties in the APE, including components of the historic built environment and archaeological resources, was provided. Determination of Eligibility (DOE) forms were requested for the Gatehouse for the Italian Ambassador's residence and the Carnegie Institution of Washington Building located at 5241 Broad Branch Road, NW.

On February 15, 2012, the DC SHPO concurred with the DOE forms prepared for the Gatehouse of the Italian Ambassador's residence (La Villa Firenze) and the Broad Branch Retaining Walls / Rock Creek Park Retaining Walls that are contributing resources to the Rock Creek Park Historic District.

On April 18, 2013, FHWA formally initiated consultation under Section 106 of the NHPA with the DC SHPO and requested concurrence with the APE, previously submitted by DDOT for review. Although the FHWA had not made a formal determination of "adverse effect," the agency anticipates that the project will results in an "effect" as a result of reconstruction of the Soapstone Creek Culvert and the project's proximity to Rock Creek Park.

Letters to and from agencies as part of Section 106 consultation are provided in this appendix.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 24, 2011

Mr. David Maloney
District of Columbia Historic Preservation Office
1100 4th Street, SW
Suite E650
Washington, DC 20024

RE: National Historic Preservation Act Section 106 Consultation for Broad Branch Road, NW

Dear Mr. Maloney:

The District Department of Transportation (DDOT), in cooperation with the Federal Highway Administration (FHWA) is preparing an Environmental Assessment (EA) for the Broad Branch Road Project in accordance with the National Environmental Policy Act (NEPA). The project will also consider effects to historic properties in accordance with the requirements of Section 106 of the National Historic Preservation Act (16 U.S.C. §470) and implementing regulations at 36 CFR Part 800. The purpose of this letter is to formally initiate Section 106 consultation for the Broad Branch Road Project.

The Broad Branch Road Project is located in Northwest Washington, DC along Rock Creek Park. The project area is between Beach Drive and Linnean Avenue. The purpose of the project is reconstruction of Broad Branch Road between Beach Drive and Linnean Avenue due to operational deficiencies, safety, aging infrastructure, and stormwater management needs.

We will contact you shortly to set up meetings to discuss this project. If you have any additional questions or comments, please contact me. Thank you very much, and we look forward to working with you on this project.

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division
202-671-2326

cc: Wayne Wilson, DDOT
Mike Hicks, FHWA DC Division
Andrew Lewis, DC SHPO
Nancy Witherell, NCPC
Cindy Cox, NPS
Carol Legard, ACHP

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

February 24, 2011

John M. Fowler,
Executive Director
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue NW, Suite 803
Old Post Office Building
Washington, DC 20004

RE: National Historic Preservation Act Section 106 Consultation for Broad Branch Road, NW

Dear Mr. Fowler:

The District Department of Transportation (DDOT), in cooperation with the Federal Highway Administration (FHWA) is preparing an Environmental Assessment (EA) for the Broad Branch Road Project in accordance with the National Environmental Policy Act (NEPA). The project will also consider effects to historic properties in accordance with the requirements of Section 106 of the National Historic Preservation Act (16 U.S.C. §470) and implementing regulations at 36 CFR Part 800.

The Broad Branch Road Project is located in Northwest Washington, DC along Rock Creek Park. The project area is between Beach Drive and Linnean Avenue. The purpose of the project is reconstruction of Broad Branch Road between Beach Drive and Linnean Avenue due to operational deficiencies, safety, aging infrastructure, storm water management needs.

If you have any additional questions or comments, please contact me. Thank you very much, and we look forward to working with you on this project.

Sincerely,

Faisal Hameed
Division Chief
Project Development, Environment & Sustainability Division
202-671-2326

cc: Wayne Wilson, DDOT
Mike Hicks, FHWA DC Division
Andrew Lewis, DC SHPO
Nancy Witherell, NCPC
Cindy Cox, NPS
Carol Legard, ACHP

Preserving America's Heritage

March 31, 2011

Faisal Hameed
Division Chief
Project Development, Environment
& Sustainability Division
District Department of Transportation
2000 14th Street NW, 7th Floor
Washington, DC 20009

Ref: *Proposed Broad Branch Road Project, Rock Creek Park*
Northwest Washington, District of Columbia

Dear Mr. Hameed:

The Advisory Council on Historic Preservation (ACHP) recently received your letter notifying us that the District Department of Transportation (DDOT), in cooperation with the Federal Highway Administration (FHWA), has initiated preparation of an Environmental Assessment (EA) and the Section 106 review for the referenced project. We appreciate receiving this early notification; however, it is premature for us to determine whether or not our participation in consultation is warranted.

As you are aware, it is the sponsoring federal agency that is responsible for complying with Section 106 of the National Historic Preservation Act and its implementing regulations, "Protection of Historic Properties" (36 CFR Part 800). Accordingly, FHWA should determine the effect of the referenced project on historic properties, in coordination with DDOT. Pursuant to 36 CFR Part 800.6(a)(1), the ACHP should be notified by FHWA only when the undertaking will adversely affect historic properties.

While DDOT will undoubtedly have an active role in the Section 106 process, further correspondence to the ACHP on this project should be initiated by FHWA, and accompanied by appropriate documentation as specified in 36 CFR 800.11(e). If you have any questions, please contact Ms. Carol Legard of our staff at 202-606-8522 or via e-mail at clegard@achp.gov.

Sincerely,

Charlene Dwin Vaughn

Charlene Dwin Vaughn, AICP
Assistant Director
Federal Permitting, Licensing, and Assistance Section
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

GOVERNMENT OF THE DISTRICT OF COLUMBIA
STATE HISTORIC PRESERVATION OFFICER

April 5, 2011

Mr. Faisal Hameed, Division Chief
Project Development, Environment & Sustainability Division
District Department of Transportation
2000 14th Street, NW, 6th Floor
Washington, DC 20009

RE: Initiation of Section 106 Review: Broad Branch Road Reconstruction Project

Dear Mr. Hameed:

Thank you for contacting the DC State Historic Preservation Office (SHPO) to initiate the Section 106 review process for the above-referenced undertaking in accordance with 36 CFR 800. We understand that the proposed project will involve reconstruction of Broad Branch Road from Beach Drive to Linnean Avenue and that the District Department of Transportation (DDOT) will be preparing an Environmental Assessment (EA) for the project in cooperation with the Federal Highway Administration (FHWA). This letter contains our initial comments regarding effects on historic properties.

As you are aware, the section of Broad Branch Road that is proposed for reconstruction falls within the boundaries of the Rock Creek Park Historic District. Portions of the historically significant Fort Circle Connecting Park System are also located within the general project area. Information about archaeological resources that may be affected by the undertaking was forwarded to the project consultants on March 29, 2011. Direct and indirect effects on these and any other historic properties should be considered when developing the Area of Potential Effect (APE) for the project. We look forward to reviewing a draft APE, a list of potential consulting parties and additional information about the proposed scope of work when it becomes available.

In the meantime, please contact me at andrew.lewis@dc.gov or 202-442-8841 if you should have any questions or comments regarding the historic built environment. Questions or comments relating to archaeology should be directed to Ruth Trocolli at ruth.trocolli@dc.gov or 202-442-8836. Thank you for providing this initial opportunity to review and comment.

Sincerely,

C. Andrew Lewis
Senior Historic Preservation Specialist
DC State Historic Preservation Office

11-129

1100 4th Street, SW, Suite E650, Washington, DC 20024 Phone: 202-442-7600, Fax: 202-442-7638

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DISTRICT DEPARTMENT OF TRANSPORTATION

Planning, Policy & Sustainability Administration

August 25, 2011

Mr. Andrew Lewis
Senior Historic Preservation Specialist
District of Columbia State Historic Preservation Office
1100 4th Street, SW
Suite E650
Washington, DC 20024

RE: Consultation under Section 106 of the National Historic Preservation Act
Proposed Definition of the Area of Potential Effects for the Broad Branch Road Rehabilitation Project, NW

Dear Mr. Lewis:

As indicated in our Section 106 initiation letter dated February 24, 2011, the District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) are preparing an Environmental Assessment (EA) for the reconstruction of Broad Branch Road between Beach Drive and Linnean Avenue, NW. The project will also consider effects to historic properties in accordance with the requirements of Section 106 of the National Historic Preservation Act (16 U.S.C. §470) and its implementing regulations, 36 CFR Part 800.

DDOT in consultation with your office (in a meeting on August 16, 2011) has defined the area of potential effects (APE) boundaries as the east bank of Broad Branch between Beach Drive and 27th Street NW; the first row of structures north of Broad Branch Road between 27th Street NW and Nevada Avenue NW; several residences south of Broad Branch Road along Linnean Avenue; and the first row of residences west of Broad Branch Road between 27th Street NW and Beach Drive. This APE is considered sufficient to include all proposed repairs or modifications to Broad Branch Road, to incorporate any possible construction staging areas, to accommodate any modifications and/or replacement of the Soapstone Creek culvert, and to assess any visual or audible intrusions.

We formally request your final review and concurrence with the proposed APE for this project. If you have any additional questions or comments, please contact me. Thank you very much, and we look forward to working through the Section 106 process with you on this project.

Sincerely,

Faisal Hameed
Division Chief,
Project Development, Environment & Sustainability Division

cc: Wayne Wilson (DDOT)
Mike Hicks (FHWA)
Cindy Cox (NPS)
David W. Levy (NCPC)

GOVERNMENT OF THE DISTRICT OF COLUMBIA
STATE HISTORIC PRESERVATION OFFICER

September 28, 2011

Mr. Faisal Hameed
Division Chief, Project Development, Environment & Sustainability Division
District Department of Transportation
2000 14th Street, NW, 6th Floor
Washington, DC 20009

RE: Draft Area of Potential Effects: Broad Branch Road Reconstruction Project

Dear Mr. Hameed:

Thank you for providing the DC State Historic Preservation Office (SHPO) with a draft Area of Potential Effects (APE) for the above-referenced undertaking. We have reviewed the draft document and are writing to provide our comments in accordance with Section 106 of the National Historic Preservation Act.

Given the relatively steep terrain and dense vegetation that borders much of the project area, we agree that the proposed APE should adequately take into account the effects of the proposed undertaking. If necessary, the APE can be revised as we learn more about the nature of the reconstruction efforts and their likely effects on historic properties.

Historic Built Environment: According to our records, the historic properties within the APE that are listed in the National Register of Historic Places (National Register) include the Rock Creek Park and the Fort Circle Connecting Parks Historic Districts. Potentially eligible properties include the gatehouse for the Italian Ambassador's residence, "La Villa Firenze," which is located just to the north of the intersection of Broad Branch Road NW and Ridge Road NW on the western side of the street (the residence address is 2800 Albemarle Street, NW). According to our initial research, this building was constructed in 1925 and may be eligible for listing in the National Register when considered in context with La Villa Firenze. A Determination of Eligibility (DOE) Form should be completed to evaluate this building's potential historical significance. Similarly, the 1933 Carnegie Institution of Washington Building located at 5241 Broad Branch Road, NW should be evaluated in a DOE Form. No other DOE Forms are recommended at this time.

Archaeology: There are no previously identified archaeological sites within the APE but we will continue to work with DDOT to identify the need for and/or level of archaeological survey as project consultation continues.

We look forward to consulting further with DDOT to identify consulting parties, evaluate historic properties and to review project plans and the forthcoming Environmental Assessment. If you should have any questions or comments regarding this matter, please contact me at andrew.lewis@dc.gov or 202-442-8841. Questions or comments relating to archaeology should be directed to Ruth Trocolli at ruth.trocolli@dc.gov or 202-442-8836. Thank you for providing this additional opportunity to comment.

Sincerely,

Andrew Lewis

C. Andrew Lewis
Senior Historic Preservation Specialist
DC State Historic Preservation Office

11-129

1100 4th Street, SW, Suite E650, Washington, DC 20024 Phone: 202-442-7600, Fax: 202-442-7638

DC STATE HISTORIC PRESERVATION OFFICE DETERMINATION OF ELIGIBILITY FORM

PROPERTY INFORMATION

Property Name(s): Gatehouse for La Villa Firenze
Street Address(es): 4400 Broad Branch Road, NW
Square(s) and Lot(s): 2248, Lot 12
Property Owner(s): Government of Italy

The property/properties is/are being evaluated for potential historical significance as:

☐ An individual building or structure.
☐ A contributing element of a historic district (specify):
☐ A possible expansion of a historic district (specify):
☐ A previously unevaluated historic district to be known as (specify):
☐ An archaeological resource with site number(s) (specify):
☐ An object (e.g. statue, stone marker etc.) (specify):
☐ A new multiple property/thematic study regarding (specify):
☐ A contributing element of a multiple property/thematic study (specify):
☒ Other (specify): A contributing element to La Villa Firenze complex, most likely NRHP-eligible, but now on foreign soil (Italian government)

Property description, rationale for determination & other pertinent information (enter text below):

The residence located at 4400 Broad Branch Road, NW is a Tudor Revival style house constructed between 1925 and 1927 that serves as a gatehouse for La Villa Firenze, currently the Italian Ambassador's residence (Figures 1 and 2). The gatehouse is a one and a half story building with stucco exterior, half-timbering and two stone chimneys. All windows have stone sills. The first floor windows are four-over-four double hung sash windows (Figure 1); the second floor window on the east façade is a six-over-six double hung sash window (Figure 2). The original shutters have been removed and storm windows have been installed over the original windows (Figure 2). The original slate roof has been replaced with asphalt shingles. The original stone retaining walls along Broad Branch Road at the entrance to the driveway and the original stone pillars flanking the driveway are intact (Figure 1). The light fixtures on the stone pillars have been replaced and a wrought iron fence has been added (Figure 2). Minimal alterations to the exterior design of the gatehouse are apparent and the overall integrity of design remains intact.

La Villa Firenze, the Italian Ambassador's residence, is located at 2800 Albemarle Street, NW (Figure 3). Originally constructed between 1925 and 1927 for Mrs. Blanche Estabrook O'Brien (Williams 2004; Realtor.com 2011), La Villa Firenze is a 24,000 square foot Tudor revival mansion with 59 rooms including seven bedrooms and eleven baths, located on 22 acres west of Rock Creek Park (Williams 2004; Landsman 2006) (Figure 3). Mrs. O'Brien was the widow of Paul Roebling, a member of a New Jersey family responsible for financing and building the Brooklyn Bridge, which opened in 1883. She was married to her second husband, Colonel Arthur O'Brien, Assistant Secretary of War under Newton D. Baker, when construction began on the residence (Williams 2004). Mrs. O'Brien selected architect Russell O. Kluge to design the home and H. F. Huber to design the interiors (Washington DC Visitor Information 2011); former U.S. Army Corps of Engineers General Richard Marshall was the contractor. When construction

was complete, the estate was named Estabrook by Mrs. O'Brien (Williams 2004). The following description is excerpted from several magazine articles (Dan 2010; Williams 2004).

Figure 1. Gatehouse for La Villa Firenze, looking northwest (pre-1935). (E. B. Thompson, DC Public Library Photo Archives)

Figure 2. Gatehouse for La Villa Firenze, looking west (2011).

Figure 3. Site Plan of La Villa Firenze and location of the Gatehouse, Washington, DC.

The main residence was constructed of gray fieldstone, quarried on the site, with limestone trim (Figure 4). A variegated slate roof, green shutters, and leaded glass windows completed the design. Several outbuildings also graced the estate, including a large gatehouse on Broad Branch Road, garage with servant's quarters, 90-foot swimming pool, tennis courts, and a barn which later became an art studio (Williams 2004; Barnes 1994). Like many homes of the era, the Tudor-styled residence featured rather dark interior rooms, furnished with Jacobean-style furniture. O'Brien purchased fine paneling and mantels that had been designed by noted mid-17th century architect Sir Christopher Wren in London, and had them incorporated into the house during its construction (Williams 2004). The home's interiors reflected a variety of styles, dominated by an enormous three story grand hall with carved oak beams and stairway.

Figure 4. La Villa Firenze, looking northwest (source: Dan 2010).

Following the Great Depression, Colonel and Mrs. O'Brien leased the property to the Minister of Hungary until it was sold in 1942 (Williams 2004). Colonel and Mrs. O'Brien are both buried at the Forest Lawn Memorial Park, Omaha, Nebraska (Find a Grave 2012a, 2012b; Forest Lawn Memorial Park 2012).

Colonel Meyer Robert Guggenheim, Sr. (1885-1959) purchased the stately mansion overlooking Rock Creek Park in 1942 and named the residence after his mother, Florence (Dan 2011; Williams 2004). The Guggenheim fortune stemmed from the M. Guggenheim and Son Mining and Smelting Company, the family business for which he began to work in 1925, and later from the Guggenheim Exploration Company. Col. Guggenheim retired from business in 1929 (Williams 2004). Col. Guggenheim served as Ambassador to Portugal from 1953 to1954; however, his indifferent work habits, gambling, habitual womanizing, and social faux pas led to an early demise of his political career (Spinzia and Spinzia 2007). The Guggenheims changed much of the dark interiors of the residence into a lighter appearance by utilizing a number of

interior decorating ideas like pickling the oak staircase, for example. They installed two Waterford chandeliers in the drawing room (Williams 2004). Unfortunately, a fire in 1946 destroyed a large amount of original paneling. Austrian architect, Michael Rosenauer, was hired that year to restore the interiors of the house.

M. Robert Guggenheim died in 1959 and his fourth wife and widow, Rebecca Pollard "Polly' Guggenheim, married John A. Logan in 1962, and together they resided at the estate until 1976 (Williams 2004). Rebecca Pollard ``Polly" Guggenheim Logan was a philanthropist and prominent Washington hostess who also was an artist and patron of the arts (Barnes 1994). From the 1940s to the mid-1970s, Mrs. Logan was a leading entertainer of high government officials, diplomats and influential figures in the political, business and art communities, holding parties and receptions at Firenze House including Supreme Court Justices William O. Douglas and Tom C. Clark, Five-Star General Omar N. Bradley, Joint Chief of Staff Admiral Arthur Radford, presidential advisor Clark M. Clifford, evangelist Oral Roberts, pianist Van Cliburn, philanthropists Marjorie Merriwether Post and Perle Mesta, and Kermit Roosevelt, Jr., who planned the CIA's 1953 overthrow of the Iranian government (Gallery of History 2009). Among Washington's grandest estates, Firenze House was the setting for charity balls, art shows, scholarship benefits and barbecue fund-raisers for such organizations as the Children's Hearing and Speech Center. An artist and portrait painter, Mrs. Logan was a serious student of art and a founder and major supporter of the Art Barn in Rock Creek Park, a restored carriage house where the works of painters, sculptors, photographers and artisans are exhibited (Barnes 1994).

Complete with a swimming pool, a bowling alley, tennis courts and a pipe organ big enough for a cathedral, Firenze, at one time, required an 11-person service and maintenance staff. The Guggenheims converted one of the barns on the estate into an art studio. Mrs. Logan painted in oils and water colors, specializing in portraits and still lifes. Her paintings have been exhibited at the Smithsonian Institution, in Boston and in private collections. As a Washington hostess, she was known for an easygoing charm and unruffled disposition, but also a sharp and attentive eye for detail. For years, she was hostess of an annual Firenze House Christmas party, featuring special lighting and decorating, caroling and dancing. As her entertaining increased, she found less time for painting, but she continued to raise money for various art scholarships and organizations. During the presidency of Lyndon Johnson, the two Johnson daughters gave a party for their father at Firenze House featuring the famed Texas barbecue chef Walter Jetton. So successful was the barbecue, that Mrs. Logan made it an annual charity fund-raiser. The Corcoran Gallery of the Art borrowed the estate for its annual tour of private art collections. Mrs. Logan was a founder and charter member of the Washington chapter of the National Society of Arts and Letters, a member of the women's committee of the Corcoran Gallery of Art, the women's board of the National Symphony and the women's board of the Opera Society of Washington (Barnes 1994).

The Italian Government purchased the Tudor Revival mansion and its formal gardens, encompassing over 17 acres of lawns and woodlands, from Rebecca Pollard 'Polly' Guggenheim Logan in 1976 (Landsman 2006). The entire estate, recorded as nearly 22 acres, is valued at more than $42 million.

The construction contractor, former Brigadier General Richard C. Marshall, Jr. was one of four retired Army officers (along with Major Henry Cabell Maddux, Colonel James A. Moss and Lieutenant Commander C. K. Mallory) who founded the real estate development firm, Maddux, Marshall and Company and later known as Maddux, Marshall, Mallory and Moss or the 4-Ms

(Town of Garrett Park 2007). The firm primarily developed middle class suburbs during the 1920s such as Battery Park and Garrett Park in Montgomery County, Maryland (KCI Technologies, Inc. 1999a, 1999b). Battery Park featured a system of curving, discontinuous streets lined with approximately 200 lots. Maddux, Marshall and Company offered eight house types ranging from Bungalow to Spanish Revival to Colonial Revival. Clients were also free to submit their own plans for approval. A clubhouse was constructed in 1923, and a commercial area developed along Old Georgetown Road. Advertisements for Battery Park targeted military veterans through journals and magazines. Lots sold quickly, and the subdivision was almost completely constructed by 1940 (KCI Technologies, Inc. 1999a). The second phase of development in Garrett Park began after World War I, when Maddux, Marshall and Company began marketing small, mass produced cottages aimed at lower income government employees. The cottages frequently came with a choice of one of six types of Chevrolet automobile and therefore became known as "Chevy" houses. The cottages were constructed as infill around existing development (KCI Technologies, Inc. 1999b). The firm eventually owned hotels and apartments in Washington and were so successful that the firm was featured in a special section of the Washington Post in 1926 (Town of Garret Park 2007). However, the firm went out of business during the Depression.

Russell O. Kluge (1894-1967) designed La Villa Firenze and was a 4-M architect who designed the Chevy houses in Garrett Park. The compact 830-square foot interior of a typical Chevy house consisted of a living room with fireplace and dining nook. The small kitchen had a glass-fronted "dresser" for storage, an oil range, and a combination sink and laundry tray. Two bedrooms and a bath opened off a small hall, and some models included a 96-square foot rear sleeping porch. Space was maximized by the use of built-ins--a murphy bed in the living room, table and benches in the dining nook, medicine/linen cabinet in the bathroom. Plaster walls were papered and trim was stained wood. There were electric light fixtures in each room and a single "utility outlet" in the living room, and, of course, the built-in radio. The full basement had hollow-tile walls and cement floor (Town of Garret Park 2007). Russell O. Kluge was associated with the architectural firm, A.B. Mullett & Co., in 1924 and later inherited the firm in 1935 with Thomas Mullett's death. Kluge operated the firm until he was drafted in World War II (Library of Congress 2012).

Hugo F. Huber (1869-1934) was an interior decorator and his company (H. F. Huber & Co.) was one of New York's first American interior decorating firms that successfully designed, executed, and installed complete high end commercial, hospitality, and residential interiors in close conjunction with project architects. Despite significant commercial contracts Hugo F. Huber's career was built on a range of residential work for wealthy clients, often German-American like Huber (Limbach 2010). Huber designed the interiors for the late Victorian style Christian Heurich Mansion (1892-1894), in Washington, DC and the Tudor Revival style Stan Hywet Manor (1911-1917), in Akron, Ohio.

Michael Rosenauer (1884-1971) was born in Austria and was an internationally acclaimed architect who practiced in London, Vienna, and New York. In Vienna, he built a villa for his friend, the composer Richard Strauss in 1925 with curly tops to the window surroundings and sweeping Central European hip roof. Rosenauer also built thousands of working-class flats. Less romantic, these tenements won an international reputation – enough for the British planner Sir Raymond Unwin, chief architect of the Ministry of Health, to invite Rosenauer to London to advise on social housing in 1928. Rosenauer moved in an artistic and theatrical world, for some of whose leading members he would create homes. In 1940, Rosenauer left for America to form

a committee for a welfare project to house French refugee children. He went on to advise the US housing authority in Washington. While in the United States, Rosenauer acquired an understanding of American expectations of efficiency and quality. Rosenauer also designed the Time and Life Building, and numerous hotels including the Westbury, the Portman, the Inn on the Park, and the Carlton Tower in London, the Emerald Beach Hotel at Nassau, Bahamas, and hotels in the Canaries and Madeira.

National Register of Historic Places (NRHP) Determination of Eligibility.

The gatehouse associated with Estabrook/Firenze House/La Villa Firenze was originally constructed as part of the overall residential compound and has remained part of the estate through three successive owners: Colonel Arthur and Mrs. Blanche Estabrook O'Brien (1927-1942); Colonel Meyer Robert and Rebecca Pollard "Polly" Guggenheim (1942-1976); and the Government of Italy (1976-present). Estabrook/Firenze House/La Villa Firenze is also associated with the real estate development firm of Maddux, Marshall, Mallory and Moss, architect Russell O. Kluge, New York based interior designer Hugo F. Huber, and international architect Michael Rosenauer.

The gatehouse at Estabrook/Firenze House/La Villa Firenze is considered a contributing element to this residential complex; however, it is the only building visible from the public right of way. Other elements of the estate documented from the public right of way include the stone retaining walls at the entrance to the driveway and the stone pillars flanking the drive. Access to the entire estate for NRHP evaluation is restricted at this time as the property is owned by the Italian government and as such the buildings are located on foreign soil. However, based on preliminary research, Estabrook/Firenze House/La Villa Firenze and its contributing elements, would most likely be considered eligible for listing on the NRHP under Criterion B, for its association with philanthropist and prominent Washington hostess, Rebecca Pollard 'Polly' Guggenheim Logan, and under Criterion C, as an excellent representative example of the 1920s Tudor-style architecture in Washington, DC. The integrity of location, design, setting, materials, workmanship, feeling, and association remain largely intact. The main residence and gatehouse exist in their original location and both buildings retain their original exterior design, including elements of the Tudor style such as half-timbering and steeply pitched roofs. No major additions or alterations appear to have occurred to the gatehouse based on a comparison of the current building to an historic (pre-1935) photograph (Figures 1 and 2). The setting of the estate is unchanged as it is located across from Rock Creek Park, designated a national park by the time of the construction of the estate and accessible from Broad Branch Road, a winding, former county road, forming the southwest boundary of the park. The use of stone features may reflect a connection to the rustic stone architecture prominent in features of the park, including the many bridges, culverts, and retaining walls that comprise the park's architecture. Minor changes or additions to or removal of materials from the gatehouse and landscape features at the entrance include the replacement of the slate roof with asphalt shingles, removal of window shutters, and installation of a new metal fence and gate, new light fixtures in the stone pillars along the drive, and a new tall lamppost along the drive. Workmanship of the gatehouse and stone retaining walls and pillars appears undiminished. The Tudor-style gatehouse and stone features convey a sense of the aesthetic of the property as an opulent country estate. Its association with the wealthy or politically prominent echelon of Washington, DC remains with its current use as a residence for foreign dignitaries.

Although the O'Brien's owned Estabrook for 15 years, little information could be gleaned on the extent of their professional or social activities. The real estate firm of Maddux, Marshall, Mallory and Moss were known primarily for the development and construction of the modest suburban 'Chevy' houses in Montgomery County, Maryland; Although Richard Marshall and 4M architect Russell O. Kluge were involved with the design and construction of larger estate homes such as Estabrook, neither achieved acclaim for architectural design or innovation of these custom homes. Hugo F. Huber established a nationally acclaimed interior decorating firm; unfortunately his original interiors designed for Estabrook were likely destroyed by fire in 1946. Michael Rosenaur, an internationally acclaimed architect re-designed the interior after the fire; however, whether these interiors remain intact cannot be ascertained.

The gatehouse at Estabrook/Firenze House/La Villa Firenze is considered a contributing architectural element to this residential complex which is owned by a foreign government. Documentation of this standing structure for evaluation of NRHP eligibility was conducted from the public right-of-way and access to the parcel on which this structure is located was not obtained. No assessment of the archaeological potential was conducted as part of the NRHP evaluation of the gatehouse on this parcel; therefore, it is not being evaluated under Criterion D for archaeological significance.

References

Aslet, Clive
2011 Chapter Four: The Newest & Tallest of London Hotels. In *All That Life Can Afford: A Celebration of The Carlton Tower Hotel on its 50th Anniversary*. Hoberman Photographic Publishers: London. Available on line at: http://www.jumeirah.com/Global/Property/JCT/Documents/Carlton_Chap4.pdf.

Barnes, Bart
1994 Polly Guggenheim Logan Dies; Art Patron, Washington Hostess. *Washington Post*, March 15, 1994. Also Congressional Record, March 24, 1994. Available on line at: http://frwebgate2.access.gpo.gov/cgi-bin/TEXTgate.cgi?WAISdocID=xJopig/0/1/0&WAISaction=retrieve.

Dan, Sharon Jaffe
2010 Private Tour-Villa Firenze. Home & Design. Available on line at: http://www.homeanddesign.com/article.asp?article=20997. Accessed October 31, 2011.

Find a Grave
2012a Blanche Estabrook O'Brien (1881 - 1957). Available on line at: http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GRid=28480963.

2012b Col Arthur A. O'Brien (1884 - 1942). Available on line at: http://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GRid=28481021.

Forest Lawn Memorial Park
2012 Blanche Estabrook O'Brien gravesite. Available on line at: http://www.forestlawnomaha.com/GraveIndex/IndexSummaryO.html.

Gallery of History
2009 Firenze House Guest Book. Information available on line at: http://www.historyforsale.com/html/printfriendly.asp?documentid=266132.

KCI Technologies
1999a Community Summary Sheet, Battery Park.
1999b Community Summary Sheet, Garrett Park.

Landsman, Gary
2006 Bella Casa. Washington Life Magazine, June. Available on line at: http://www.washingtonlife.com/issues/june-2006/embassy-row/. Accessed October 31, 2011.

Library of Congress
2012 Mullett & Co. Architectural Drawing Archive. Library of Congress Prints and Photographs Online Catalog. Available on line at: http://www.loc.gov/pictures/item/95858231/. Accessed January 3, 2012.

Limbach, Holli
2010 Hugo F. Huber, 1869-1934 Interior Decorator, Stan Hywet Manor, Akron, Ohio. Master's thesis Abstract. Available on line at: http://etd.ohiolink.edu/view.cgi?acc_num=akron1272217507. Accessed January 3, 2012.

Realtor.com
2011 Property Record: 2800 Albemarle Street Northwest Washington DC - Realtor.com®. Available on line at: http://www.realtor.com/realestateandhomes-detail/2800-Albemarle-Street-Northwest_Wa. Accessed October 31, 2011.

Spinzia, Judith and Raymond Spinzia
207 *Long Island's Prominent South Families: Their Estates and Their Country Homes in the Towns of Babylon and Islip*. Sample pages available at: http://spinzialongislandestates.com/. Accessed October 31, 2011.

Town of Garrett Park
2007 The Chevy Houses of Garrett Park. Available on line at: http://www.garrettpark-md.gov/c/432/. Accessed November 1, 2011.

Washington DC Visitor Information
2011 The Embassy of Italy. Available on line at: http://www.americanguesthouse.com/blog/2011/08/29/the-embassy-of-italy/. Accessed on January 3, 2012.

Williams, Paul Kelsey
2004 Scenes from the Past…… *The InTowner*, April. Available on line at: http://72.52.242.20/~washingt/sites/default/files/SP_0404.pdf. Accessed on October 31, 2011.

DC STATE HISTORIC PRESERVATION OFFICE
DETERMINATION OF ELIGIBILITY FORM

PREPARER'S DETERMATION

Eligibility Recommended ☒ Eligibility Not Recommended ☐

Applicable National Register Criteria: A☐ B☒ C☒ D☐ Applicable Considerations: A☐ B☐ C☐ D☐ E☐ F☐ G☐

Susan L. Bupp, Senior Cultural Resources Specialist, Parsons February 1, 2012

Prepared By: (specify Name, Title & Organization): Date:

DC SHPO DETERMINATION AND COMMENTS

Determined Eligible ☒ Determined Not Eligible ☐

The DC SHPO concurs that the Gatehouse for La Villa Firenze located at 4400 Broad Branch Road, NW is eligible for listing in the National Register of Historic Places and the DC Inventory of Historic Sites as outlined above.

Reviewed By: David Maloney, Andrew Lewis & Kim Williams Date: February 15, 2012

DC Government Project/Permit Project Log Number (if applicable): 11-129

10

DC STATE HISTORIC PRESERVATION OFFICE
DETERMINATION OF ELIGIBILITY FORM

PROPERTY INFORMATION

Property Name(s): Broad Branch Retaining Walls / Rock Creek Park Retaining Walls
Street Address(es): Broad Branch Road, from Beach Drive to 27th Street, NW
Square(s) and Lot(s):
Property Owner(s): National Park Service, Rock Creek Park

The property/properties is/are being evaluated for potential historical significance as:

- ☐ An individual building or structure.
- ☒ A contributing element of a historic district (specify): Rock Creek Park Historic District
- ☐ A possible expansion of a historic district (specify):
- ☐ A previously unevaluated historic district to be known as (specify):
- ☐ An archaeological resource with site number(s) (specify):
- ☐ An object (e.g. statue, stone marker etc.) (specify):
- ☐ A new multiple property/thematic study regarding (specify):
- ☐ A contributing element of a multiple property/thematic study (specify):
- ☐ Other (specify):

Property description, rationale for determination & other pertinent information (enter text below):

The Rock Creek Park Historic District (RCPHD) consists of 1,754 acres of land dominated by picturesque landscapes featuring forested areas, streams, valleys, meadows, and sloping hills. The park meets NRHP Criteria A, B, and C under the themes of architecture, community planning and development, conservation, engineering, entertainment and recreation, industry, landscape architecture, military, and horticulture. Important persons associated with the history of the park include Joshua Pierce and landscape architects Frederick Law Olmsted, Jr. and John C. Olmsted. The park as a whole retains a high degree of integrity of design, workmanship, location, feeling, association, and setting. The period of significance for the district is 1791 to 1941.

The RCPHD was originally defined as 31 contributing elements and 59 non-contributing elements (Bushong 1990a and 1990b). Ten of the 31 contributing resources are also individually nominated to the NRHP (NPS 2002). One of the 31 contributing elements constitutes a category or system of resources pertinent here- the culverts and retaining walls. Individual culverts and retaining walls (ca. 1900-1941), scattered throughout the park, were not formally surveyed or inventoried as part of the NRHP nomination of the park. "Sections of retaining wall and small culverts (in many cases these structures are retaining walls pierced by a drain) are located throughout Rock Creek Park. In general the historic characteristics of this system of landscape elements can be defined as a native stone material laid in a variety of sizes in mortar or in a few cases dry designed to appear informal and inconspicuous" (Bushong 1990: 184).

At least fifteen segments of a stone retaining wall exist along Broad Branch (Figures 1-3; Table A). They are primarily located on the west side of the creek bank adjacent to Broad Branch Road. The visible portions of the segments vary in height from two to 14 courses of rough cut, irregularly coursed, dry designed (laid) stone. Although no mortar was identified in these retaining wall segments, it is possible that the mortar has been severely deteriorated to the extent it is no longer visible and lending to the appearance of the wall as dry laid. The stone is the

native brown and grey stone common in buildings and structures throughout the park. The condition of the wall segments varies. Storm water runoff from the nearby neighborhoods has eroded the banks of Broad Branch and damaged segments of wall; in addition, previous maintenance and repair projects of the road surface and utility lines have undermined portions of

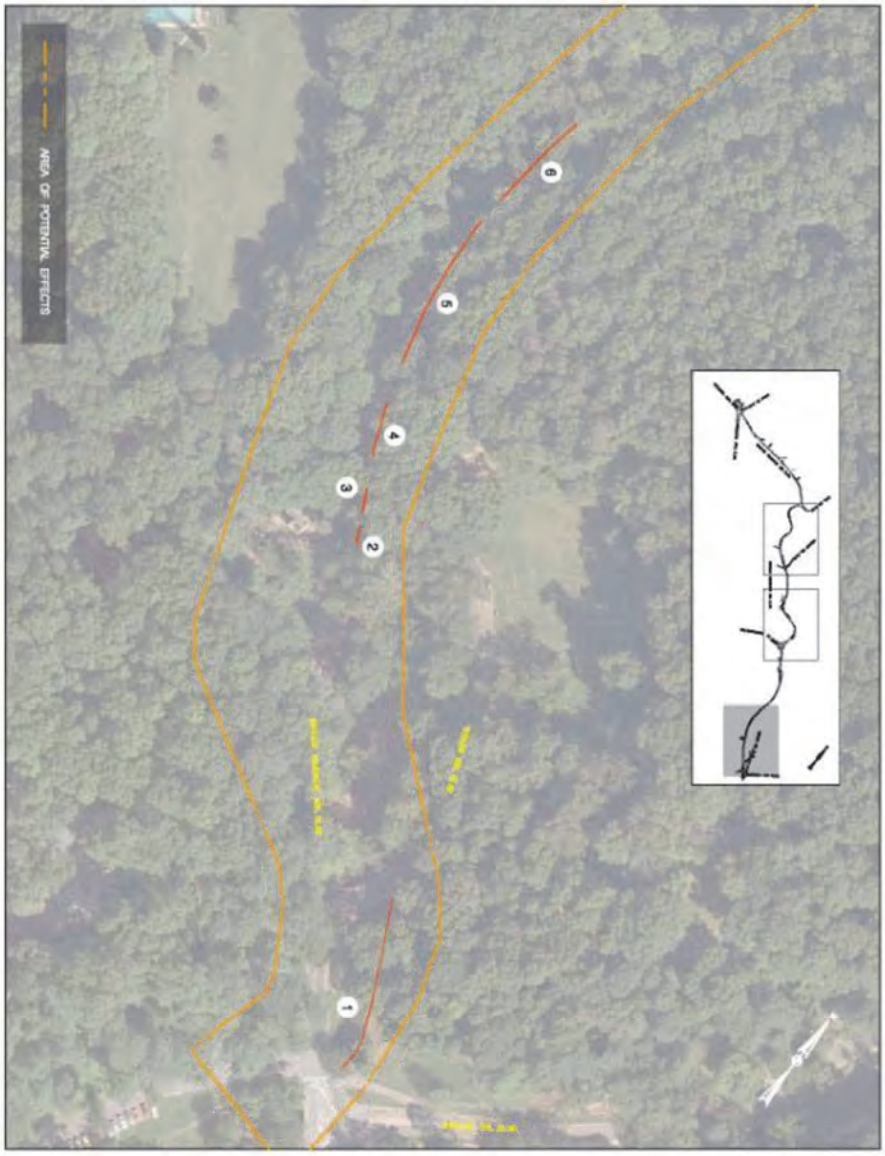


Figure 1. Location of Broad Branch Retaining Wall Segments, North of Beach Drive, NW, Rock Creek Park.

DC STATE HISTORIC PRESERVATION OFFICE
DETERMINATION OF ELIGIBILITY FORM

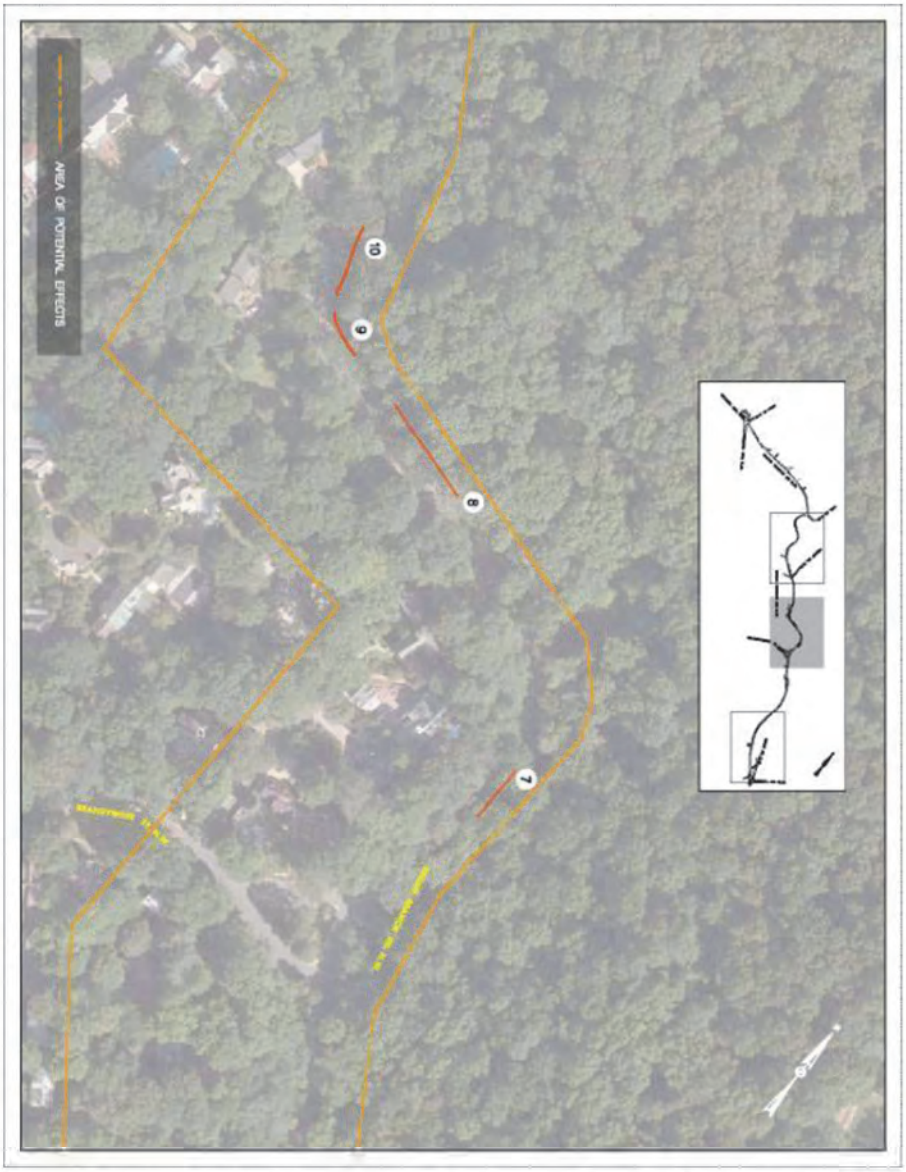


Figure 2. Location of Broad Branch Retaining Wall Segments, North of Brandywine Street, NW, Rock Creek Park.

3

DC STATE HISTORIC PRESERVATION OFFICE
DETERMINATION OF ELIGIBILITY FORM

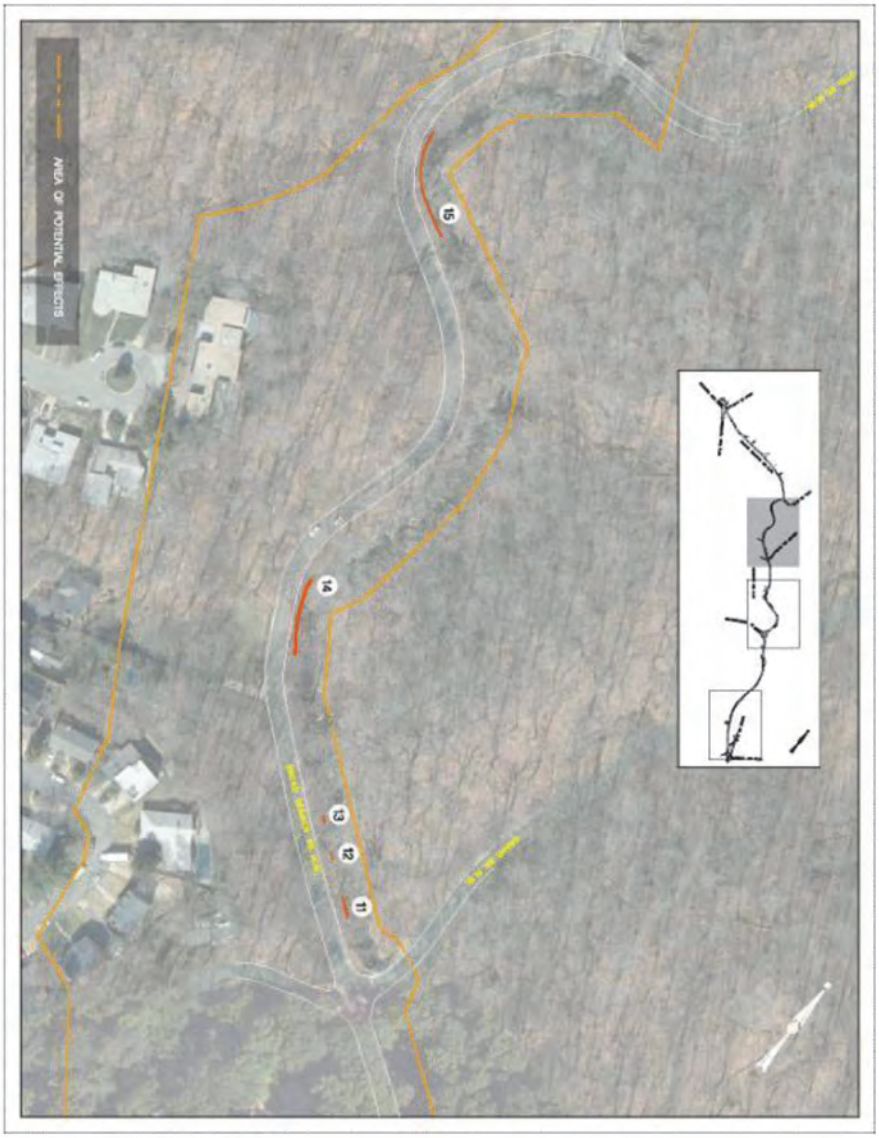


Figure 3. Location of Broad Branch Retaining Wall Segments, Grant Road, NW to 27th Street, NW, Rock Creek Park.

4

Table A. Intact Retaining Wall Segments along Broad Branch

Resource	Location	Description	NRHP Status
Dry laid stone wall Segment 1 (Figure 4)	East side of Broad Branch, between Broad Branch Road Bridge and Ridge Road Bridge (Station nos. 90+50 and 92+50)	Regularly coursed rough cut stone wall; at least eight courses visible; 212 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 2 (Figure 5)	West side of Broad Branch, North of Soapstone Creek (Station nos. 86 and 86+50)	Regularly coursed rough cut stone wall; at least three courses visible; 21 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 3 (Figure 6)	West side of Broad Branch, North of Soapstone Creek (Station nos. 85+50 and 86)	Regularly coursed rough cut stone wall; at least two courses visible; 29 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 4 (Figure 7)	West side of Broad Branch, North of Soapstone Creek (Station nos. 84+50 and 85+50)	Regularly coursed rough cut stone block wall; at least five courses visible; 66 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 5 (Figure 8)	West side of Broad Branch, North of Soapstone Creek (Station nos. 82+50 and 84+50)	Regularly coursed rough cut stone wall; maximum six courses visible; 190 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 6 (Figure 9)	West side of Broad Branch, North of Soapstone Creek (Station nos. 80 and 82+50)	Regularly coursed rough cut stone wall; maximum 14 courses visible; 124 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 7	West side of Broad Branch, North of Brandywine Avenue (Station nos. 63+50 and 64+50)	Regularly coursed rough cut stone wall; 71 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 8	West side of Broad Branch, South of Grant Road (Station nos. 59 and 60+50)	Regularly coursed rough cut stone wall; 131 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 9	West side of Broad Branch, South of Grant Road (Station nos. 58 and 58+50)	Regularly coursed rough cut stone wall; 57 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 10	West side of Broad Branch, South of Grant Road (Station nos. 56+50 and 57+50)	Regularly coursed rough cut stone wall; 90 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 11	West side of Broad Branch, North of Grant Road (Station nos. 48+50 and 49+50)	27 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 12	West side of Broad Branch, North of Grant Road (Station nos. 48 and 48+50)	10 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 13	West side of Broad Branch, North of Grant Road (Station nos. 47+50 and 48)	10 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 14	West side of Broad Branch, North of Grant Road (Station nos. 44+50 and 47)	Regularly coursed rough cut stone wall; 96 feet in length	Contributing element to RCPHD
Dry laid stone wall Segment 15	West side of Broad Branch, South of 27th Street (Station nos. 38 and 40)	Regularly coursed rough cut stone wall; 136 feet in length	Contributing element to RCPHD

Figure 4. Dry laid tabular stone retaining wall (Segment 1) located on the east side of Broad Branch, between Broad Branch Road Bridge and Ridge Road Bridge.

Figure 5. Dry laid stone retaining wall (Segment 2) located on the west side of Broad Branch, north of Soapstone Creek, showing a deteriorated wall of stone blocks, close to the road.

DC STATE HISTORIC PRESERVATION OFFICE
DETERMINATION OF ELIGIBILITY FORM

Figure 6. Dry laid stone retaining wall (Segment 3) located on the west side of Broad Branch, north of Soapstone Creek showing compromised stone blocks close to the road.

Figure 7. Dry laid stone retaining wall (Segment 4) located on the west side of Broad Branch, north of Soapstone Creek partially supporting the asphalt surface of the roadway. Photographed from the hillside on the east bank of Broad Branch, facing west.

7

Figure 8. Dry laid tabular stone retaining wall (Segment 5) located on the west side of Broad Branch, north of Soapstone Creek.

Figure 9. Dry laid tabular stone retaining wall (Segment 6) located on the west side of Broach Branch, north of Soapstone Creek.

the walls. However, in most cases, the original material is extant but has been shifted or displaced. The portions of the wall that are most intact are in the areas where the creek channel

is farthest from Broad Branch Road. This distance varies along the length of the channel, from as much as several feet to areas where the retaining wall is partially supporting the asphalt pavement of the roadway.

The following information was compiled from analysis provided by Simone Monteleone, Cultural Resources Program Manager, Rock Creek Park in April 2011.

> In determining the stone retaining wall's construction period, historic documentation (maps and photographs), secondary documentation, and physical evidence were gathered to assist in narrowing the date of construction. Broad Branch Road was extant before the creation of Rock Creek Park in 1890. Laid out by county surveyor Lewis Carberry, Broad Branch Road was established in 1839 for the Peirce family. The road followed the south side of the valley along the stream and was accessed by a short connection that paralleled the original mill race (since demolished) for Peirce Mill (ca. 1829). The road was deeded to the federal government in 1854 and became an official public highway (Davis 1996). One of the earliest surveys where the alignment of the road is indicated is a September 1864 survey plat for the Levy Court. The Michler Survey (1867) is an extensive survey of the entire Rock Creek valley, and Broad Branch Road's alignment is similar to the one depicted in the 1864 survey plat.
>
> None of these maps indicate when the stone retaining wall was constructed and no documentation has been discovered that discusses improvements to Broad Branch Road during the last quarter of the 19th century. The stone retaining wall is not continuous along the road and is evident in specific areas as the branch and road extend east toward Rock Creek. An improvement campaign, ca. 1898, was initiated for Rock Creek Park that impacted Broad Branch Road. Part of this campaign included improvements to Grant Road, which leads north into the park and connects to Glover Road. Grant Road was originally established as part of the road system constructed for the military during the Civil War (Davis 1996). The arched stone culvert constructed for this effort is believed to date to ca. 1898 and was built using similar local stone although the arched stone culvert exhibits beaded mortar joints. In 1902, the Pebble Dash Bridge was constructed at the east end of this stretch, where Broad Branch meets Rock Creek. The bridge carried traffic from Beach Drive over Broad Branch. The alignment of Broad Branch Road did not change, as demonstrated by maps from the 1890s through the turn of the 20th century. Based on the documentary evidence, it is believed that the stone retaining wall was in place by 1902.
>
> In the late 1950s, the Pebble Dash Bridge and a ford over Broad Branch were replaced with the modern concrete bridges that are extant today. The current bridge that crosses over Broad Branch to access Glover Road is located west of the site of Pebble Dash Bridge. The limits of disturbance for the new bridge did not impact the stone retaining walls that are located further west along Broad Branch. Photographs of the construction confirm this.

During the 1930s, as part of New Deal work programs during the Great Depression, 7,516 square yards of roadway in the park was resurfaced and some retaining walls in the park were constructed (Bushong 1990: 143). Although it is not clear, it is possible that Broad Branch Road

was among the extant roadways that was resurfaced and that segments of retaining walls along the creek bank were built or improved during that time.

Additional photographic evidence shows a retaining wall along the west bank of Broad Branch in front of a building on the west side of Broad Branch Road (the gate house for La Villa Firenze). The photograph was accessioned in the 1940s but appears to have been taken before 1935 based on the absence of wing walls around the Soapstone Creek culvert, known to have been installed in that year. The retaining wall visible in the photo coincides with the location of the Broad Branch retaining wall documented here as Segment 2. The stones in Segments 2 and 3 are blockier than the thinner, tabular stones in other segments of the wall. Whether the retaining walls date to the turn of the 20th century or as late as the 1930s, they were confirmed at their current location from a photograph dating to before 1935.

National Register of Historic Places (NRHP) Determination of Eligibility.

Based on documentary research, photographic documentation, and on-site testing, it is estimated that the segments of the stone retaining wall at Broad Branch Road were constructed between the 1890s and the 1930s. The 15 segments of the retaining wall along the bank of Broad Branch represent a landscape element constructed within the early decades of Rock Creek Park development. They are constructed in the rustic stone style and material and within the period of significance (ca. 1900 to 1941) of retaining walls and culverts considered contributing elements to the Rock Creek Park Historic District. Although their integrity has been diminished from erosion and improper maintenance, the 15 segments collectively convey their purpose as a retaining wall. They are recommended as a contributing element to the Rock Creek Park Historic District within the category of culverts and retaining walls under Criteria A (overall conservation of natural settings within urban landscapes) and C (landscape architecture). The fifteen segments of the retaining wall along the bank of Broad Branch represent a landscape element which is a contributing element of the Rock Creek Park Historic District. The retaining wall segments represent an architectural resource which is located in areas where the steepness of the slope along Broad Branch indicates little to no potential for archaeological deposits. No field assessment of the archaeological potential was conducted as part of the NRHP evaluation of the retaining walls in this area; therefore, it is not being evaluated under Criterion D for archaeological significance.

References

Bushong, William

1990a Historic Resource Study, Rock Creek Park, District of Columbia. Prepared by the United States Department of the Interior, National Park Service.

1990b Rock Creek Park Historic District. National Register of Historic Places Registration Form. US Department of Interior, National Park Service, Washington, DC.

National Park Service (NPS)

2002 Rock Creek Park and the Rock Creek and Potomac Parkway – Draft General Management Plan Environmental Impact Statement. Rock Creek Park and the Rock Creek and Potomac Parkway, Washington, DC National Park Service, US Department of the Interior.

Davis, Timothy

1996 Rock Creek Park Road System. Historic American Building Record (HAER)DC-55. Available on line at: http://lcweb2.loc.gov/pnp/habshaer/dc/dc0900/dc0966/data/dc0966data.pdf.

DC STATE HISTORIC PRESERVATION OFFICE
DETERMINATION OF ELIGIBILITY FORM

PREPARER'S DETERMATION

Eligibility Recommended ☒ Eligibility Not Recommended ☐

Applicable National Register Criteria: A☒ B☐ C☒ D☐ Applicable Considerations: A☐ B☐ C☐ D☐ E☐ F☐ G☐

Susan L. Bupp, Senior Cultural Resources Specialist, Parsons February 1, 2012

Prepared By: (specify Name, Title & Organization): Date:

DC SHPO DETERMINATION AND COMMENTS

Determined Eligible ☒ Determined Not Eligible ☐

The DC SHPO concurs that the Broad Branch Retaining Walls / Rock Creek Park Retaining Walls located along Broad Branch Road from Beach Drive to 27th Street, NW are eligible for listing in the National Register of Historic Places as described above. We also note that Simone Monteleone of the National Park Service reviewed this DOE and concurred with its findings.

Reviewed By): David Maloney, Andrew Lewis & Kim Williams Date: February 15, 2012

DC Government Project/Permit Project Log Number (if applicable): 11-129

11

U.S. Department of Transportation
Federal Highway Administration

District of Columbia Division
(202) 219-3570 FAX 219-3545

1990 K Street, NW
Suite 510
Washington, DC 20006-1103

APR 18 2013

In Reply Refer To: HDA-DC

Mr. David Maloney
District of Columbia Historic Preservation Office
1100 4th Street, SW
Suite E650
Washington, DC 20024

Dear Mr. Maloney:

The District Department of Transportation (DDOT) in conjunction with the Federal Highway Administration (FHWA) is preparing an Environmental Assessment (EA) for the Broad Branch Road project in accordance with the National Environmental Policy Act (NEPA). The effect of the project on historic properties will also have to be considered in accordance with the requirements of Section 106 of the National Historic Preservation Act (16 U.S.C. §470) and implementing regulations 36 CFR Part 800.

The Broad Branch Road project is located in Northwest Washington, DC adjacent to Rock Creek Park. The project area is between Beach Drive and Linnean Avenue. The purpose of the project is reconstruction of Broad Branch Road between Beach Drive and Linnean Avenue due to operational deficiencies, safety, aging infrastructure, and stormwater management needs.

The purpose of this letter is to formally initiate Section 106 consultation for the Broad Branch Road project. FHWA has not made a formal determination of "adverse effect"; however, it is anticipated that the proposed reconstruction of the soapstone culvert, damaged during a rain event in April 2011 in tandem with the project area's close proximity to the Rock Creek Park Historic District (RCPHD), will have an "effect".

A map of the anticipated area of potential effects (APE) is enclosed with this letter for your concurrence. The map was developed in consultation with your office. The proposed APE boundaries are the east bank of Broad Branch between Beach Drive and 27th Street NW; the first row of structures north of Broad Branch Road between 27th Street NW and Nevada Avenue NW; several residences south of Broad Branch Road along Linnean Avenue; and the first row of residences west of Broad Branch Road between 27th Street NW and Beach Drive. This APE is considered sufficient to include all proposed repairs or modifications to Broad Branch Road. It incorporates possible construction staging areas; accommodates any modifications and/or replacement of the Soapstone Creek culvert; and assesses any visual or audible intrusions.

If you have questions or comments, please contact Michael Hicks of my staff at: 202-219-3513 or michael.hicks@dot.gov.

Sincerely,

Joseph C. Lawson

Joseph C. Lawson
Division Administrator

Enclosure

cc: Carol Legard, ACHP
Faisal Hameed, DDOT
Andrew Lewis, DC SHPO

H PUBLIC MEETING NOTICES AND ADVERTISEMENTS

As part of the public involvement program, DDOT conducted two public information meetings to inform as well as solicit input from the general public on the proposed project. Numerous methods were employed to publicize the public meetings, including newspaper advertisements in The Current Newspapers and El Tiempo Latino Newspaper as well as announcements on both the project website and DDOT website. Postings were also made to the surrounding communities' and Advisory Neighborhood Commission's (ANC) listservs and announcements were mailed to adjacent property owners.

The meetings were conducted on the dates listed below. Copies of the associated announcements for each of the public meetings are provided in this appendix.

- Public Scoping/Concept Development – July 13, 2011
- Public Alternatives Meeting – November 8, 2012

THE NORTHWEST CURRENT– JULY 11, 2011

PUBLIC SCOPING MEETING
BROAD BRANCH ROAD ENVIRONMENTAL ASSESSMENT

The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) invite you to attend a Public Scoping Meeting for the Broad Branch Road Environmental Assessment in accordance with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. This Public Scoping Meeting will be held on:

Wednesday, July 13, 2011
from 6:30 PM to 8:30 PM

Chevy Chase Community Center
5601 Connecticut Avenue, NW
Washington, DC 20015

The project involves the rehabilitation of Broad Branch Road between Linnean Avenue and Beach Drive, NW. The proposed improvements are to address current infrastructure deficiencies as well as community and safety concerns.

The purpose of this Public Scoping Meeting is to afford all interested persons the opportunity to provide comments regarding the project. Maps, displays, and background information will be available for review at the meeting.

Both verbal and written statements will be taken at the Public Scoping Meeting. Comments may also be submitted via e-mail to BroadBranch@parsons.com or to Stephen Walter at Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

If you need special accommodations or language assistance services (translation or interpretation), please contact Stephen Walter at 202-775-3380 or by e-mail at Stephen.C.Walter@parsons.com in advance of the meeting. These services will be provided free of charge.

For more information please contact:

Wayne Wilson, DDOT Project Manager, at (202) 671-4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, S.E.
Washington, DC 20003

EL TIEMPO LATINO NEWSPAPER – JULY 6, 2011

AUDIENCIA PUBLICA
SOBRE EL ALCANCE DE LA VALORACIÓN AMBIENTAL DE BROAD BRANCH ROAD

El Departamento de Transporte del Distrito (DDOT) y la Administración Federal de Carreteras (FHWA) le invita a asistir a una audiencia publica sobre el alcance de la Valoración Ambiental de Broad Branch Road, en cumplimiento con el Acta de Política Ambiental Nacional (NEPA) y la Sección 106 del Acta de Preservación Histórica Nacional. Esta audiencia publica se llevara a cabo el:

Miércoles, Julio 13, 2011
De 6:30 PM a 8:30 PM

Chevy Chase Community Center
5601 Connecticut Avenue, NW
Washington, DC 20015

El proyecto consiste en la rehabilitación de Broad Branch Road entre Linnean Avenue y Beach Drive NW. Las mejorías propuestas tienen en cuenta las deficiencias actuales de la infraestructura así como también asuntos pertinentes a la comunidad y la seguridad.

El propósito de esta audiencia publica es brindar a las personas interesadas, la oportunidad de aportar comentarios relacionados con el proyecto. Mapas, Exposiciones e información histórica estará disponible en la audiencia.

Declaraciones orales y escritas serán tomadas en la Audiencia Publica. Sus comentarios también pueden ser enviados por e-mail a BroadBranch@parsons.com o a Stephen Walter, Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT esta comprometido a asegurar que nadie este excluido de participar, o ser negado de los beneficios de sus proyectos, programas y servicios a causa de raza, color, origen nacional o sexo, como esta determinado en el Titulo VI del Acta de Derechos Civiles de 1964 o a causa de discapacidades como lo determina el Acta de Americanos con Discapacidades.

Si usted necesita acomodación especial o servicios de asistencia de idioma (traducción o interpretación), favor contactar a Stephen Walter al 202-775-3380 o por e-mail a Stephen.C.Walter@parsons.com con anterioridad a la audiencia. Estos servicios serán prestados sin ningún costo.

Para mayor información favor contactar a:

Wayne Wilson, DDOT Project Manager, at (202) 671-4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, S.E.
Washington, DC 20003

PUBLIC SCOPING MEETING – ANNOUNCEMENTS

Broad Branch Road

PUBLIC SCOPING MEETING
BROAD BRANCH ROAD ENVIRONMENTAL ASSESSMENT

The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) invite you to attend a Public Scoping Meeting for the Broad Branch Road Environmental Assessment in accordance with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. This Public Scoping Meeting will be held on:

Wednesday, July 13, 2011
from 6:30 PM to 8:30 PM

Chevy Chase Community Center
5601 Connecticut Avenue, NW
Washington, DC 20015

The project involves the rehabilitation of Broad Branch Road between Linnean Avenue and Beach Drive, NW. The proposed improvements are to address current infrastructure deficiencies as well as community and safety concerns.

The purpose of this Public Scoping Meeting is to afford all interested persons the opportunity to provide comments regarding the project. Maps, displays, and background information will be available for review at the meeting.

Both verbal and written statements will be taken at the Public Scoping Meeting. Comments may also be submitted via e-mail to BroadBranch@parsons.com or to Stephen Walter at Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

If you need special accommodations or language assistance services (translation or interpretation), please contact Stephen Walter at 202-775-3380 or by e-mail at Stephen.C.Walter@parsons.com in advance of the meeting. These services will be provided free of charge.

For more information please contact:

Wayne Wilson, DDOT Project Manager, at 202.671.4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, SE
Washington, DC 20003

d. District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Broad Branch Road

AUDIENCIA PUBLICA
SOBRE EL ALCANCE DE LA VALORACIÓN AMBIENTAL DE BROAD BRANCH ROAD

El Departamento de Transporte del Distrito (DDOT) y la Administración Federal de Carreteras (FHWA) le invita a asistir a una audiencia publica sobre el alcance de la Valoración Ambiental de Broad Branch Road, en cumplimiento con el Acta de Política Ambiental Nacional (NEPA) y la Sección 106 del Acta de Preservación Histórica Nacional. Esta audiencia publica se llevara a cabo el:

Miércoles, Julio 13, 2011
De 6:30 PM a 8:30 PM

Chevy Chase Community Center
5601 Connecticut Avenue, NW
Washington, DC 20015

El proyecto consiste en la rehabilitación de Broad Branch Road entre Linnean Avenue y Beach Drive NW. Las mejorias propuestas tienen en cuenta las deficiencias actuales de la infraestructura así como también asuntos pertinentes a la comunidad y la seguridad.

El propósito de esta audiencia publica es brindar a las personas interesadas, la oportunidad de aportar comentarios relacionados con el proyecto. Mapas, Exposiciones e información histórica estará disponible en la audiencia.

Declaraciones orales y escritas serán tomadas en la Audiencia Publica. Sus comentarios también pueden ser enviados por e-mail a BroadBranch@parsons.com o a Stephen Walter, Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT esta comprometido a asegurar que nadie este excluido de participar, o ser negado de los beneficios de sus proyectos, programas y servicios a causa de raza, color, origen nacional o sexo, como esta determinado en el Titulo VI del Acta de Derechos Civiles de 1964 o a causa de discapacidades como lo determina el Acta de Americanos con Discapacidades.

Si usted necesita acomodación especial o servicios de asistencia de idioma (traducción o interpretación), favor contactar a Stephen Walter al 202-775-3380 o por e-mail a Stephen.C.Walter@parsons.com con anterioridad a la audiencia. Estos servicios serán prestados sin ningún costo.

Para mayor información favor contactar a:

Wayne Wilson, DDOT Project Manager, at 202.671.4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, SE
Washington, DC 20003

d. District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

THE CURRENT NEWSPAPER – OCTOBER 31, 2012

PUBLIC MEETING
BROAD BRANCH ROAD ENVIRONMENTAL ASSESSMENT

The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) invite you to attend the second Public Meeting for the Broad Branch Road Environmental Assessment in accordance with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. This Public Meeting will be held on:

Thursday, November 8, 2012
From 6:30 PM to 8:30 PM

The Methodist Home of DC
4901 Connecticut Avenue, NW
Washington, DC 20008

The project involves the rehabilitation of Broad Branch Road between Linnean Avenue and Beach Drive, NW. The proposed improvements are to address current infrastructure deficiencies as well as community and safety concerns.

The purpose of the Public Meeting is to engage the public in the project and provide opportunity to provide comments on the project and on the alternatives being developed for the project. Engineering concepts, displays, and other technical information will be available for review at the meeting. Interested parties for historic preservation issues are also invited.

Both verbal and written statements will be taken at the Public Meeting. Comments may also be submitted via e-mail to BroadBranch@parsons.com or to Stephen Walter at Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

If you need special accommodations or language assistance services (translation or interpretation), please contact Stephen Walter at 202-775-3380 or by e-mail at Stephen.C.Walter@parsons.com in advance of the meeting. These services will be provided free of charge.

For more information please contact:

Wayne Wilson, DDOT Project Manager, at (202) 671-4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, S.E.
Washington, DC 20003

EL TIEMPO LATINO NEWSPAPER – NOVEMBER 2, 2012

AUDIENCIA PUBLICA
SOBRE EL ALCANCE DE LA VALORACIÓN AMBIENTAL DE BROAD BRANCH ROAD

El Departamento de Transporte del Distrito (DDOT) y la Administración Federal de Carreteras (FHWA) le invita a asistir a la Segunda Audiencia Publica sobre la Evaluacion Ambiental de Broad Branch Road, en cumplimiento con el Acto de Politica Ambiental Nacional (NEPA) y la Sección 106 del Acto de Preservación Histórica Nacional. Esta Audiencia Publica se llevara a cabo el dia:

Jueves, Noviembre 8, 2012
De 6:30 PM a 8:30 PM

The Methodist Home of DC
4901 Connecticut Avenue, NW
Washington, DC 20008

El proyecto consiste en la rehabilitación de Broad Branch Road entre Linnean Avenue y Beach Drive NW. Las mejorías propuestas tienen en cuenta las deficiencias actuales de la infraestructura así como también asuntos concernientes a la comunidad y a la seguridad.

El propósito de esta Audiencia Publica es de envolver al publico en el proyecto y darles la oportunidad de expresar sus comentarios acerca del proyecto y de las alternativas que se estan desarrollando para el proyecto. Conceptos de Ingenieria, Exposiciones y otras Informaciones Tecnicas estaran disponibles para la audiencia. Personas interesadas para cuestiones de la Preservacion Historica tambien estan invitadas.

Declaraciones orales y escritas serán tomadas en la Audiencia Publica. Sus comentarios también pueden ser enviados por e-mail a BroadBranch@parsons.com o al Sr. Stephen Walter, Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT esta comprometido a asegurar que nadie este excluido de participar, o ser negado de los beneficios de sus proyectos, programas y servicios a causa de su raza, color, origen nacional o sexo, como esta determinado en el Titulo VI del Acto de Derechos Civiles de 1964 o a causa de incapacidades como lo determina el Acto de Americanos con Incapacidades.

Si usted necesita acomodación especial o servicios de asistencia de idioma (traducción o interpretación), por favor contactarse con el Sr. Stephen Walter al 202-775-3380 o por e-mail a Stephen.C.Walter@parsons.com antes del dia de la audiencia. Estos servicios serán proveidos sin ningún costo.

Para mas información por favor pongase en contacto con:

Wayne Wilson, DDOT Project Manager, at (202) 671-4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, S.E.
Washington, DC 20003

PUBLIC ALTERNATIVES MEETING – ANNOUNCEMENTS

Broad Branch Road

PUBLIC MEETING
BROAD BRANCH ROAD ENVIRONMENTAL ASSESSMENT

The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) invite you to attend the second Public Meeting for the Broad Branch Road Environmental Assessment in accordance with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. This Public Meeting will be held on:

Thursday, November 8, 2012
from 6:30 PM to 8:30 PM
The Methodist Home of DC
4901 Connecticut Avenue, NW
Washington, DC 20008

The project involves the rehabilitation of Broad Branch Road between Linnean Avenue and Beach Drive, NW. The proposed improvements are to address current infrastructure deficiencies as well as community and safety concerns.

The purpose of the Public Meeting is to engage the public in the project and provide opportunity to provide comments on the project and on the alternatives being developed for the project. Engineering concepts, displays, and other technical information will be available for review at the meeting. Interested parties for historic preservation issues are also invited.

Both verbal and written statements will be taken at the Public Meeting. Comments may also be submitted via e-mail to BroadBranch@parsons.com or to Stephen Walter at Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

If you need special accommodations or language assistance services (translation or interpretation), please contact Stephen Walter at 202-775-3380 or by e-mail at Stephen.C.Walter@parsons.com in advance of the meeting. These services will be provided free of charge.

For more information please contact:

Wayne Wilson, DDOT Project Manager, at (202) 671-4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, SE
Washington, DC 20003

d. District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Broad Branch Road

AUDIENCIA PUBLICA
SOBRE EL ALCANCE DE LA VALORACIÓN AMBIENTAL DE BROAD BRANCH ROAD

El Departamento de Transporte del Distrito (DDOT) y la Administración Federal de Carreteras (FHWA) le invita a asistir a la Segunda Audiencia Publica sobre la Evaluacion Ambiental de Broad Branch Road, en cumplimiento con el Acto de Política Ambiental Nacional (NEPA) y la Sección 106 del Acto de Preservación Histórica Nacional. Esta Audiencia Pública se llevara a cabo el día:

Jueves, Noviembre 8, 2012
De 6:30 PM a 8:30 PM
The Methodist Home of DC
4901 Connecticut Avenue, NW
Washington, DC 20008

El proyecto consiste en la rehabilitación de Broad Branch Road entre Linnean Avenue y Beach Drive NW. Las mejorias propuestas tienen en cuenta las deficiencias actuales de la infraestructura así como también asuntos concernientes a la comunidad y a la seguridad.

El propósito de esta Audiencia Pública es de envolver al publico en el proyecto y darles la oportunidad de expresar sus comentarios acerca del projecto y de las alternativas que se estan desrrollando para el proyecto. Conceptos de Ingeniería, Exposiciones y otras Informaciones Tecnicas estaran disponibles para la audiencia. Personas interesadas para cuestiones de la Preservacion Historica tambien estan invitadas.

Declaraciones orales y escritas serán tomadas en la Audiencia Pública. Sus comentarios también pueden ser enviados por e-mail a BroadBranch@parsons.com o al Sr. Stephen Walter, Parsons Transportation Group, 100 M Street, SE, Suite 1200, Washington, DC 20003.

DDOT esta comprometido a asegurar que nadie este excluido de participar, o ser negado de los beneficios de sus proyectos, programas y servicios a causa de su raza, color, origen nacional o sexo, como esta determinado en el Titulo VI del Acto de Derechos Civiles de 1964 o a causa de incapacidades como lo determina el Acto de Americanos con Incapacidades.

Si usted necesita acomodación especial o servicios de asistencia de idioma (traducción o interpretación), por favor contactarse con el Sr. Stephen Walter al 202-775-3380 o por e-mail a Stephen.C.Walter@parsons.com antes del dia de la audiencia. Estos servicios serán proveidos sin ningun costo.

Para mas información por favor pongase en contacto con:

Wayne Wilson, DDOT Project Manager, at (202) 671-4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, SE
Washington, DC 20003

d. District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

PUBLIC MEETING MATERIALS

As part of the public involvement program, DDOT conducted two public information meetings to inform as well as solicit input from the general public on the proposed project.

The following pages contain copies of the materials provided to the public at the two public meetings (July 13, 2011 and November 8, 2012). These materials include public comment forms as well as brochures containing information about the project.

Broad Branch Road

ENVIRONMENTAL ASSESSMENT

PUBLIC SCOPING MEETING

July 13, 2011
6:00 pm – 8:00 pm

U.S. Department of Transportation
Federal Highway Administration

PURPOSE AND NEED

Purpose of Project

- Rehabilitation of Broad Branch Road, NW

Need for Improvements

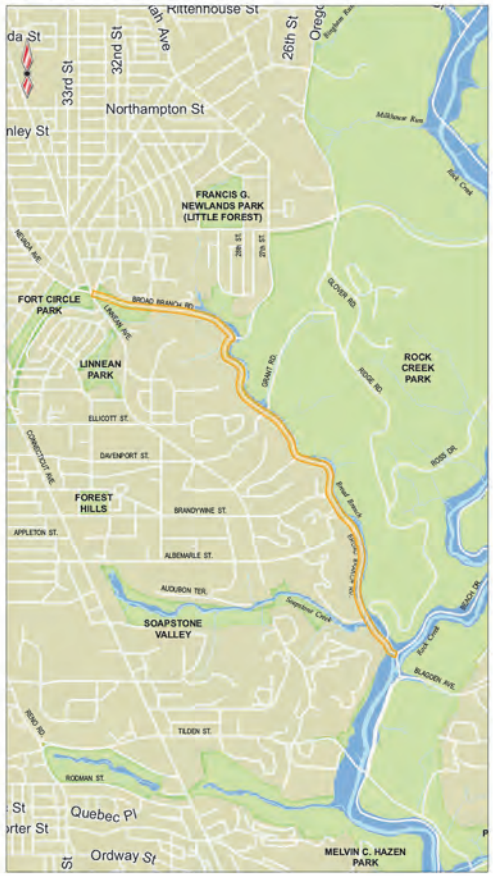
- Road Conditions
  - Pavement and Geometry
  - Intersection Geometrics
  - Roadway Shoulders
  - Roadway Structures
  - Stormwater Management
- Safety
  - Geometrics
  - Shared Space for Multiple Transportation Modes
- System Linkage (all modes)
  - Linkages to Rock Creek Park Trail, Soapstone Valley Trail


Deteriorating Infrastructure


Poor Road Conditions


Limited Pedestrian Accommodation

Natural Resources



= Stream
= Floodplain
= Park
= Community Facility
= School
= University

U.S. Department of Transportation
Federal Highway Administration

ENVIRONMENTAL INVENTORY

Community Resources

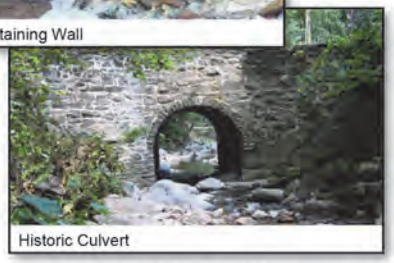
= Embassy
= Embassy Residence
= Nursing Home
= Fire House
= Church
= Synagogue

Broad Branch Road

NATIONAL HISTORIC PRESERVATION ACT (NHPA)

Section 106 of the NHPA requires consultation with the State Historic Preservation Office and other interested parties.

Historic Retaining Wall



Historic Culvert

An Assessment of Effect on Cultural Resources will be prepared and summarized in the Environmental Assessment.

Interested parties are invited to participate.

SCHEDULE

Milestone	Date
Project Kick-off	March 2011
WE ARE HERE Public Scoping Meeting	July 13, 2011
Initial Alternatives	Summer 2011
Public Alternatives Meeting	Summer 2011
Environmental Assessment	Fall 2011
Public Hearing	Fall 2011
Decision Document	Late Fall 2011

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

OPPORTUNITIES FOR PUBLIC COMMENT

Public Meetings

Public Meeting #1 – Tonight
Public Scoping

Public Meeting #2 – Summer 2011
Alternatives Review

Public Meeting #3 – Fall 2011
Public Hearing on Environmental Assessment

Tell Us What You Think

Tonight

- Fill out a comment form
- Talk to the Court Reporter

Email

BroadBranch@parsons.com

Mail

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

Project Website

www.BroadBranchRdEA.com

Thank you for your interest and participation in this project.

Wayne Wilson, DDOT Project Manager
202.671.4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, SE
Washington, DC 20003

Broad Branch Road

VALORACION AMBIENTAL

AUDIENCIA PUBLICA DEL ALCANCE

Julio 13, 2011
6:00 pm – 8:00 pm

d. District Department of Transportation

ONE CITY

U.S. Department of Transportation
Federal Highway Administration

PROPÓSITO Y NECESIDAD

Propósito del Proyecto

- Rehabilitación de Broad Branch Road, NW

Necesidad de Mejorías

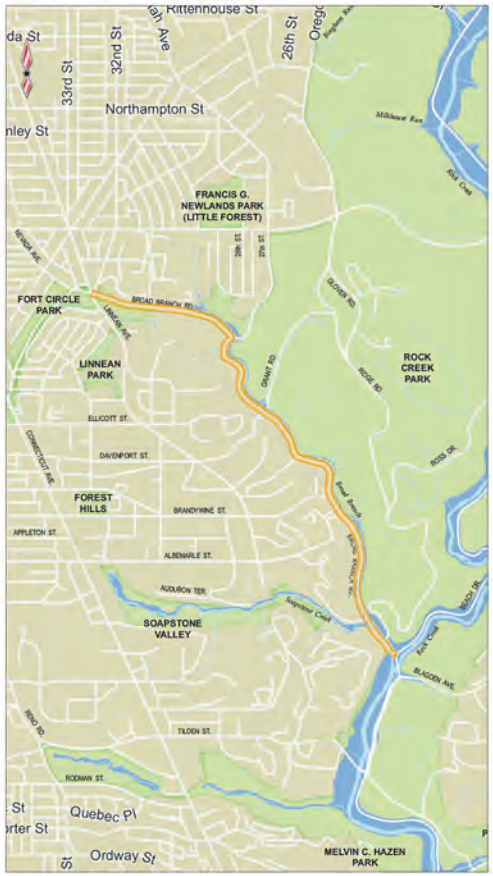
- Condiciones de la Vía
  - Pavimento y Geometría
  - Geometría de las Intersecciones
  - Acotamientos
  - Estructuras de la Vía
  - Manejo de Aguas Lluvia
- Seguridad
  - Geometría
  - Espacio Compartido por Múltiples Modos de Transporte
- Conexión al Sistema (todos los modos)
  - Conexiones con senderos de Rock Creek Park y Soapstone Valley


Infraestructura en Deterioro


Vía en Malas Condiciones


Capacidad Limitada de Peatones

Recursos Naturales



= Arroyo
= Plano de Inundación
= Parque
= Instalaciones de la Co
= Escuela
= Universidad

d. District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

INVENTARIO AMBIENTAL

Recursos de la Comunidad

omunidad
= Embajada
= Residencia de Embajador
= Enfermería
= Bomberos
= Iglesia
= Sinagoga

Broad Branch Road

ACTA NACIONAL DE PRESERVACIÓN HISTÓRICA (NHPA)

La sección 106 del NHPA requiere que se consulte con la Oficina Estatal de Preservación Histórica y demás partes interesadas.

Muro de Contención Histórico

Alcantarilla Histórica

Una valoración del Efecto en los Recursos Culturales será preparada y resumida en la Valoración Ambiental.

Partes interesadas están invitadas a participar.

CALENDARIO

Actividad	Fecha
Inicio del Proyecto	Marzo 2011
AQUÍ ESTAMOS: Audiencia Publica del Alcance	Julio 13, 2011
Alternativas Iniciales	Verano 2011
Audiencia Publica de las Alternativas	Verano 2011
Valoración Ambiental	Otoño 2011
Audiencia Publica	Otoño 2011
Documento de Decisión	Finales Otoño 2011

DDOT esta comprometido a asegurar que nadie este excluido de participar, o ser negado de los beneficios de sus proyectos, programas y servicios a causa de raza, color, origen nacional o sexo, como esta determinado en el Título VI del Acta de Derechos Civiles de 1964 o a causa de discapacidades como lo determina el Acta de Americanos con Discapacidades.

OPORTUNIDADES PARA COMENTARIOS DEL PUBLICO

Audiencias Publicas

Audiencia Publica #1 - Hoy
Alcance del Publico

Audiencia Publica #2 - Verano 2011
Revisión de las Alternativas

Audiencia Publica #3 - Otoño 2011
Audiencia Publica sobre la valoración ambiental

Díganos lo que Piensa

Hoy

- Llene una hoja de comentarios
- Hable con un reportero

Email

BroadBranch@parsons.com

Correo

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

Sitio Web del Proyecto

www.BroadBranchRdEA.com

Gracias por su interés y participación en este proyecto.

Wayne Wilson, DDOT Project Manager
202.671.4582
District Department of Transportation
Infrastructure Project Management Administration
55 M Street, SE
Washington, DC 20003

Broad Branch Road

Comment Sheet

July 13, 2011

Thank you for participating in tonight's meeting. Please take a few moments to complete the following questions. In order for your comments to be included in the meeting record, you may either leave your completed comment sheet at the designated location or it may be stamped and returned by mail to the addressee on the reverse side.

What do you think are the most needed improvements to Broad Branch Road? Improvement elements can include the roadway itself, traffic calming, stormwater management, sidewalks, bicycle lanes, crosswalks, etc.

Are there other concerns and issues that you think should be addressed? These can include community concerns, environmental resources, aesthetics and other land use and transportation issues.

Please provide any additional comments and recommendations including those related to the public meeting.

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

Thank you for your comments.

d. District Department of Transportation

ONE CITY

U.S. Department of Transportation
Federal Highway Administration

STAPLE OR TAPE HERE

FOLD HERE

RETURN ADDRESS

PLEASE PLACE POSTAGE HERE

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

FOLD HERE

STAPLE OR TAPE HERE

Broad Branch Road

HOJA DE COMENTARIOS

Julio 13, 2011

Gracias por participar en la reunión de hoy. Por favor tome un momento y complete las siguientes preguntas. Con el fin de que sus comentarios sean incluidos en el registro de la audiencia, usted debe dejar su hoja de comentarios, una vez terminada, en el lugar designado o puede ser sellada y enviada por correo a la dirección al respaldo.

Cuales cree usted que son las mejorías de mayor necesidad en Broad Branch Road? Elementos a mejorar pueden ser la vía, reducción del trafico, manejo de aguas lluvias, aceras o banquetas, carriles para bicicleta, cruces peatonales, etc.

Existen otros asuntos que deban ser tratados? Como por ejemplo preocupaciones de la comunidad, recursos ambientales, estética del proyecto, usos del suelo u otros asuntos relacionados con el transporte.

Por favor suministre cualquier comentario adicional y recomendaciones, incluyendo aquellas relacionadas con la audiencia publica.

DDOT esta comprometido a asegurar que nadie este excluido de participar, o ser negado de los beneficios de sus proyectos, programas y servicios a causa de raza, color, origen nacional o sexo, como esta determinado en el Titulo VI del Acta de Derechos Civiles de 1964 o a causa de discapacidades como lo determina el Acta de Americanos con Discapacidades.

Gracias por sus comentarios.

d. District Department of Transportation

ONE CITY

U.S. Department of Transportation
Federal Highway Administration

PEGUE AQUI

DOBLE AQUI

REMITE:

COLOQUE SELLO POSTAL AQUI

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

DOBLE AQUI

PEGUE AQUI

BROAD BRANCH ROAD, NW
WASHINGTON, DC

PUBLIC MEETING
November 8, 2012
6:30 pm – 8:30 pm

ONE CITY

District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

OVERVIEW

The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) are proposing the rehabilitation of the 1.7-mile segment of Broad Branch Road between Linnean Avenue and Beach Drive along the northwestern border of Rock Creek Park. Prior to moving the project through final design and construction, the proposed action will be evaluated as part of an Environmental Assessment (EA) that is being prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), Section 106 of the National Historic Preservation Act, the FHWA's Environmental Impact and Related Procedures (23 CFR 771). FHWA is the lead federal agency for the project with the National Park Service (NPS) serving as a Cooperating Agency.

The purpose of the proposed action is to rehabilitate Broad Branch Road to satisfy operational and safety needs and done so in a manner keeping with the setting of the project area. Context sensitive solutions will take into account the adjoining land uses – residential developments and wooded areas to the west and Rock Creek Park to the east. Improvements to the corridor will consider all modes of transportation including bicycles and pedestrians.

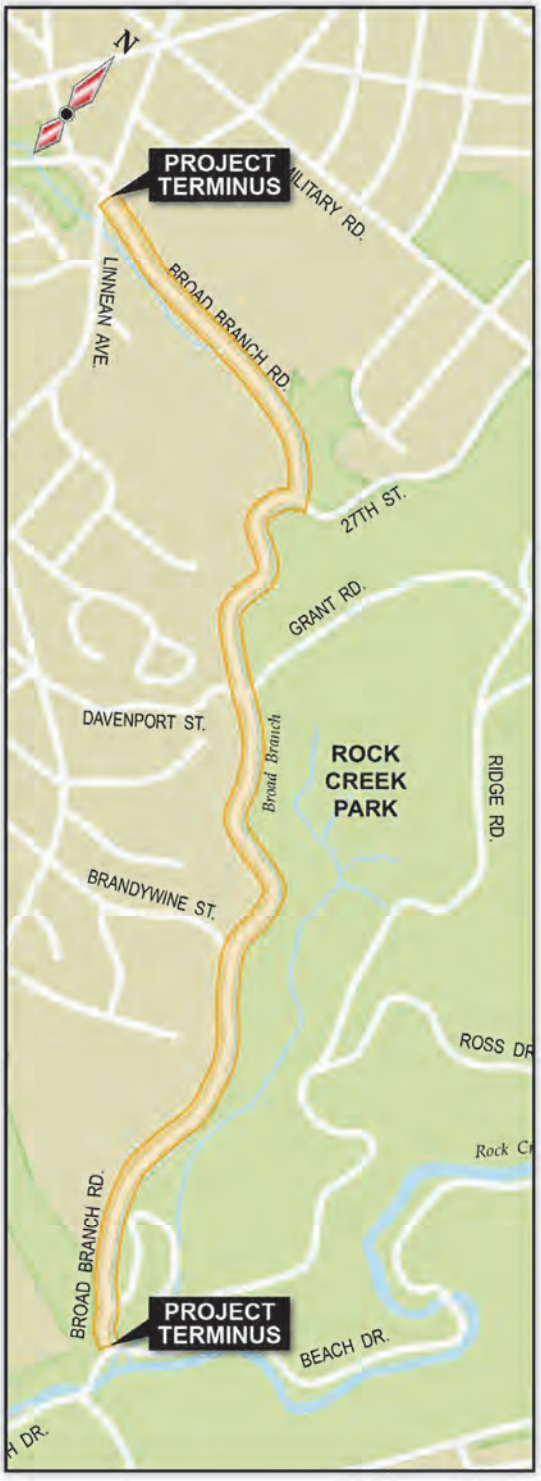
PURPOSE OF TONIGHT'S PUBLIC MEETING

The purpose of tonight's meeting is to engage the public in the project's development and to allow you an opportunity to provide comments on the project as well as the improvement alternatives being considered. Plans depicting the engineering concepts, as well as displays of other technical information will be reviewed with the meeting attendees. The meeting will also serve to provide a means to meet with individuals who are interested in the preservation of historic structures and features in the corridor.

DESIGN OBJECTIVES

In order to develop the improvement concepts, the project team established a set of objectives that consider the agency and public comments received during the initial scoping process. These objectives were used to guide the team in the developing of improvement concepts and options that best satisfy the project's needs and requirements.

- Create a safe facility for all travel modes – auto, bicycle and pedestrian
- Effectively manage stormwater runoff
- Avoid / minimize use of parkland by staying within the DDOT right-of-way to the extent possible
- Preserve and protect environmental resources – both man-made and natural
- Utilize environmentally sensitive materials and designs that are in keeping with the context of the project area



1

ALTERNATIVES

Three candidate build alternatives, plus a no-action alternative, have been identified for further detailed evaluation. Each was developed to satisfy the project objectives while minimizing environmental impacts. The alternatives are described below and the three candidate build alternatives are illustrated on the pages which follow.

No Action Alternative 1

Under the No Action Alternative, the improvements to Broad Branch Road would include minor restoration activities (safety and routine maintenance) that maintain the continuing operation of the existing roadway. While the No Action Alternative does not meet the purpose and need of the project, it provides a basis for comparing the environmental consequences of the Candidate Build Alternatives.

Candidate Build Alternative 2

Alternative 2 represents the minimum width alternative that meets the project's purpose and need. Along the entire length of Broad Branch Road, this alternative consists of two 10-foot wide travel lanes with standard and gutter on both sides of the roadway. A new T-intersection is proposed at Brandywine Street. New 5-foot wide sidewalk will be provided on west side of the roadway extending from Linnean Avenue for approximately 1,000 feet along the open green space. Retaining walls will be provided on both the sides to keep proposed improvements within existing right-of-way. The existing storm drain outfall locations will be maintained and stormwater management will be improved by providing bio-swales/rain gardens where space is available along with water quality catch basins. An optional 5-foot wide sidewalk can be provided on west side from Soapstone Creek to the parking lot entrance just north of Beach Drive.

Candidate Build Alternative 3

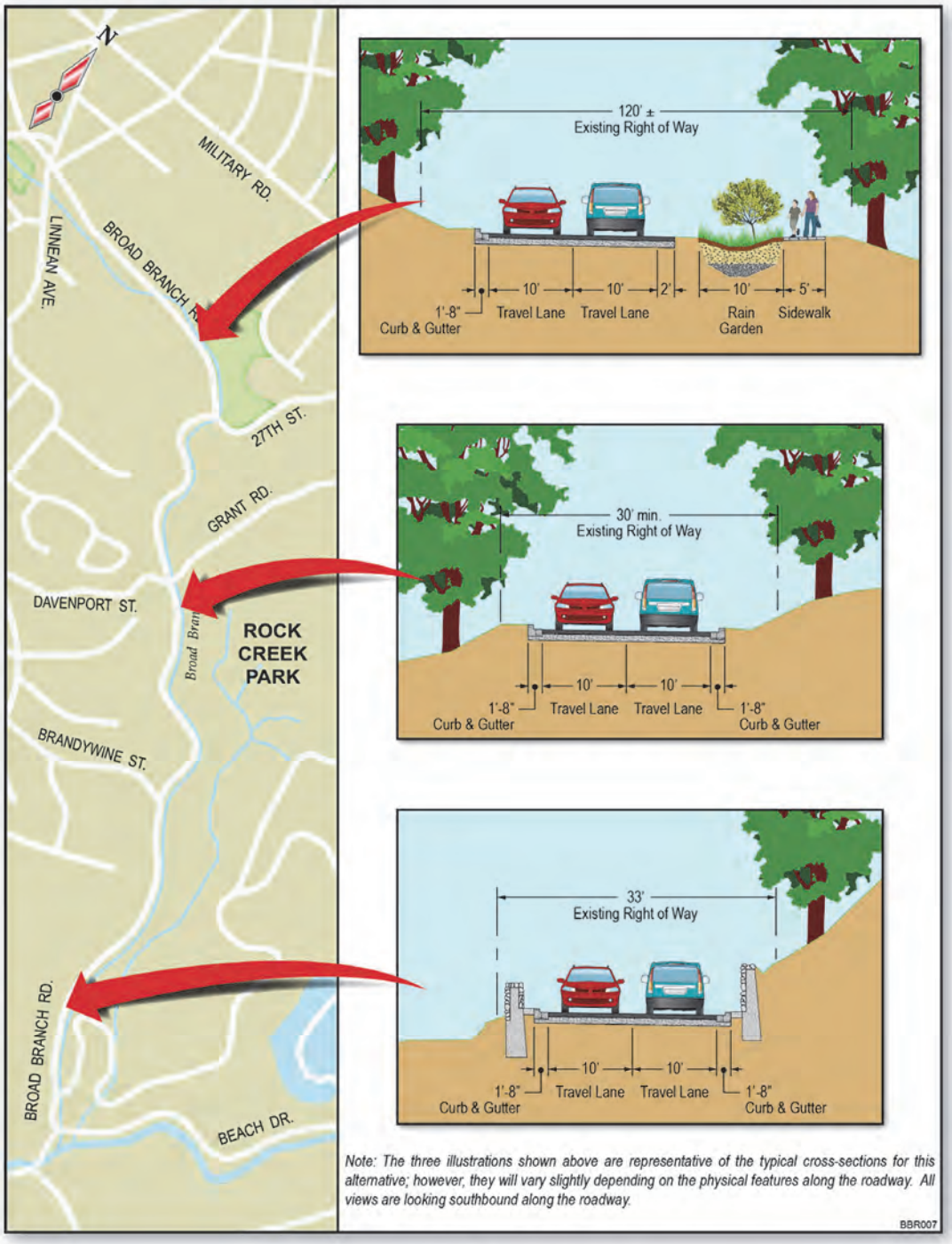
Alternative 3 consists of two 10-foot wide travel lanes with standard curb and gutter on both sides of the entire roadway. A new T-intersection is proposed at Brandywine Street. This alternative will also have a 6-foot wide sidewalk on the west side of the roadway for the entire length. A 4-foot wide planting strip will separate the sidewalk and roadway in several sections. Additional right-of-way will be required to accommodate the proposed sidewalk and planting strip. Retaining walls will be provided on both sides of the roadway to minimize steep side slopes. The existing storm drain outfall locations will be maintained and stormwater management will be improved by providing bio-swales/rain gardens where space is available along with water quality catch basins.

Candidate Build Alternative 4

Alternative 4 is the widest of the project alternatives and consists of two 10-foot wide travel lanes, a 4-foot wide bike lane on east side, and standard curb and gutter on both sides of the roadway. A new T-intersection is proposed at Brandywine Street. A 4-foot wide planting strip will separate the sidewalk and roadway in several sections. Additional right-of-way will be required to accommodate proposed sidewalk and planting strip. Retaining walls will be provided on both sides of the roadway to minimize steep side slopes. The existing storm drain outfall locations will be maintained and stormwater management will be improved by providing bio-swales/rain gardens where space is available along with water quality catch basins.

2

CANDIDATE BUILD ALTERNATIVE 2

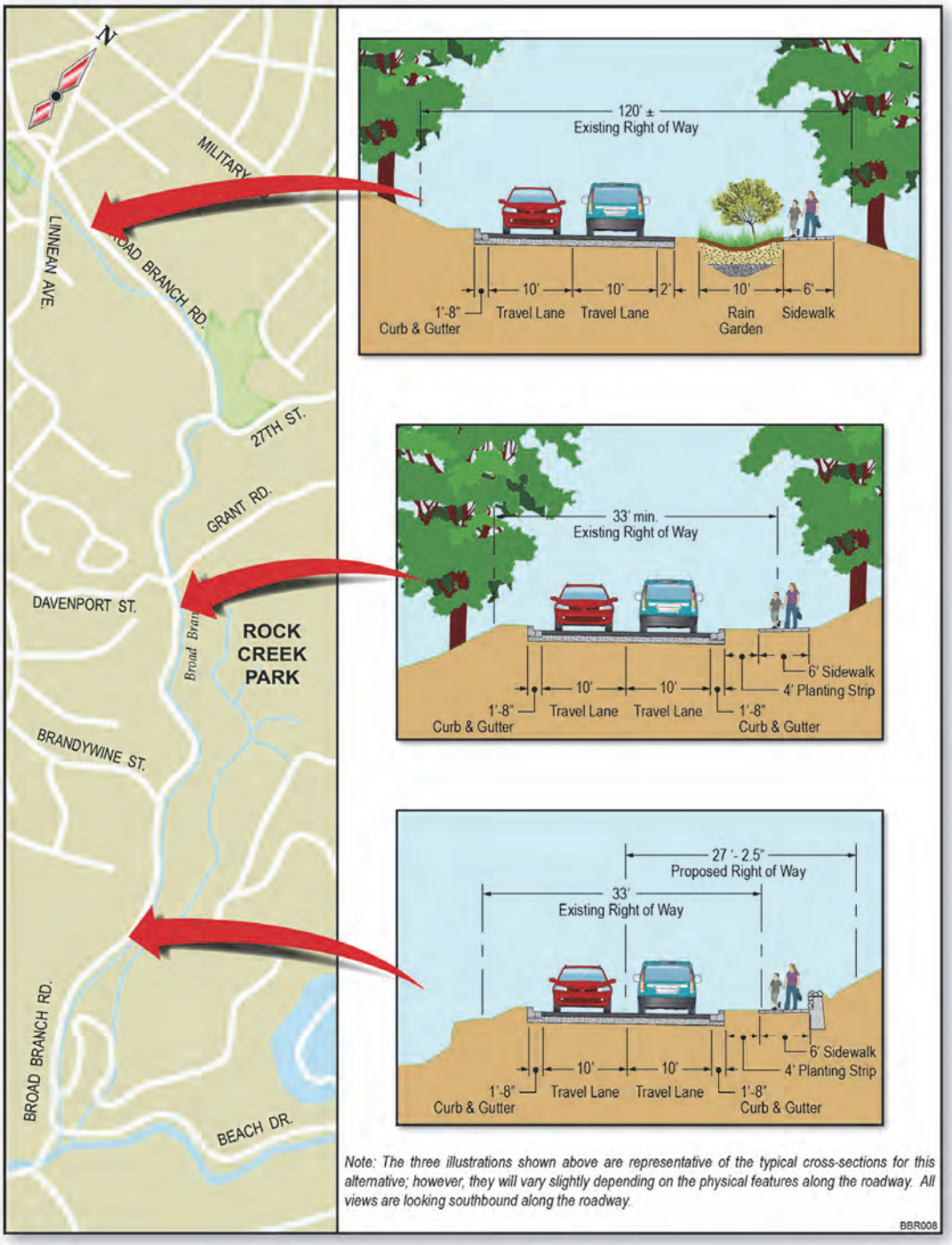


Note: The three illustrations shown above are representative of the typical cross-sections for this alternative; however, they will vary slightly depending on the physical features along the roadway. All views are looking southbound along the roadway.

BBR007

3

CANDIDATE BUILD ALTERNATIVE 3

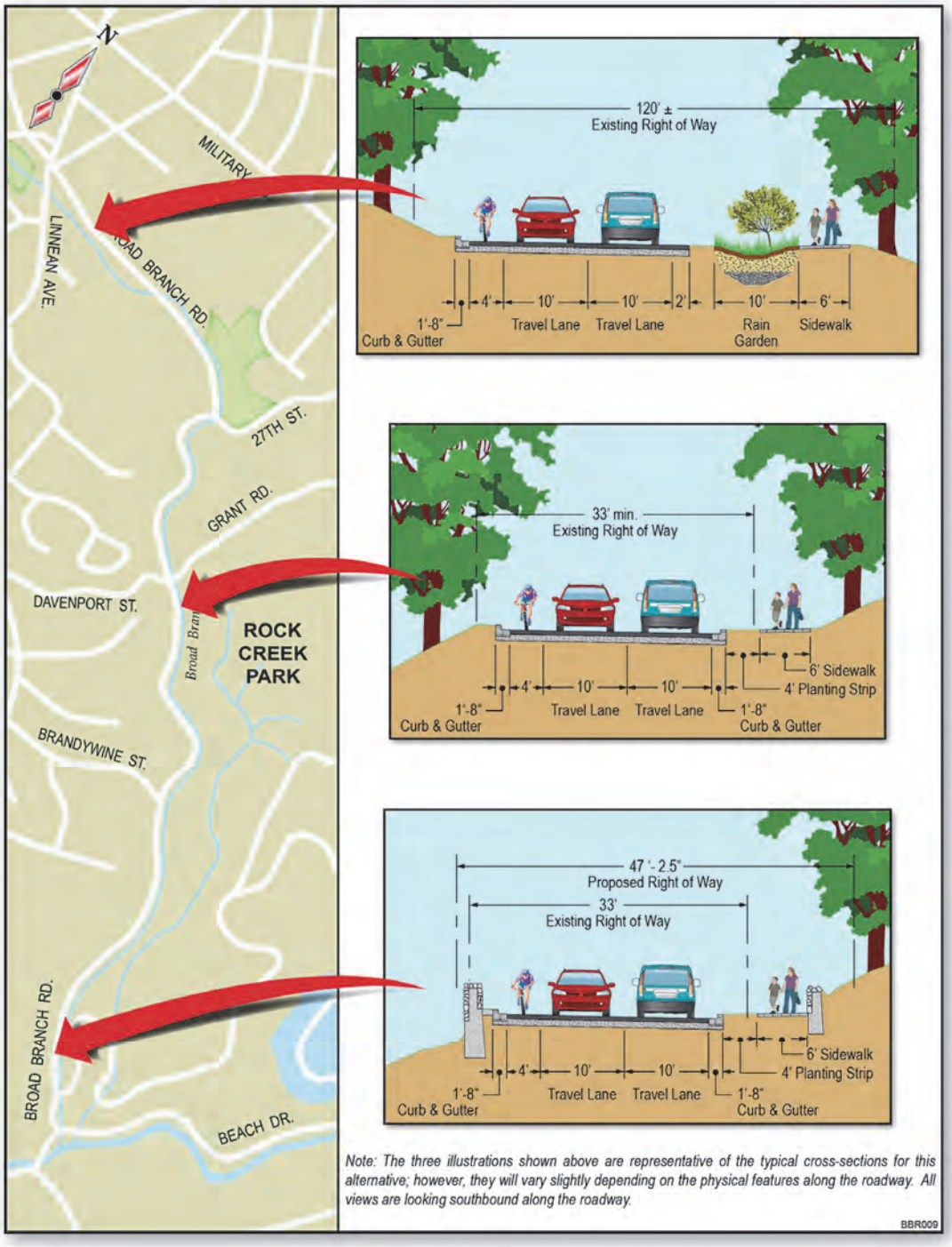


Note: The three illustrations shown above are representative of the typical cross-sections for this alternative; however, they will vary slightly depending on the physical features along the roadway. All views are looking southbound along the roadway.

BBR008

4

CANDIDATE BUILD ALTERNATIVE 4



Note: The three illustrations shown above are representative of the typical cross-sections for this alternative; however, they will vary slightly depending on the physical features along the roadway. All views are looking southbound along the roadway.

BBR009

5

PROJECT SCHEDULE

Milestone	Date
Project Kick-off	March 2011
Public Scoping Meeting	July 2011
Initial Alternatives	Summer 2012
WE ARE HERE Public Alternatives Meeting	Fall 2012
Environmental Assessment	Winter 2013
Public Hearing	Spring 2013
Decision Document	Summer 2013

TELL US WHAT YOU THINK

Tonight

- Fill out a comment form
- Talk to the Court Reporter

Email

BroadBranch@parsons.com

Mail

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

Project Website

www.BroadBranchRdEA.com

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

Thank you for your interest and participation in this project.

6

District Department of Transportation
55 M Street, SE
Washington, DC 20003
www.ddot.dc.gov

BROAD BRANCH ROAD, NW
WASHINGTON, DC

AUDIENCIA PUBLICA
Noviembre 8, 2012
6:30 pm – 8:30 pm

ONE CITY

District Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

RESUMEN

El Departamento de Transporte del Distrito (DDOT) y La Administración Federal de Carreteras (FHWA) están proponiendo la rehabilitación de 1.7-millas del segmento de Broad Branch Road entre Linnean Avenue y Beach Drive a lo largo de la frontera noroeste del Rock Creek Park. Antes de llevar el proyecto hacia el diseño final y construcción, las acciones propuestas serán evaluadas como parte de una Valoración Ambiental (EA) que esta siendo preparada en acuerdo con el Acta Nacional de Política Ambiental de 1969 (NEPA), la Sección 106 del Acta Nacional de Preservación Histórica, los impactos ambientales de FHWA y Procedimientos Relacionados (23 CFR 771). FHWA es la agencia federal líder del proyecto con el Servicio Nacional de Parques (NPS) como agencia cooperante.

El propósito de la acción propuesta es la rehabilitación de Broad Branch Road para satisfacer las necesidades de operación y seguridad de manera que se mantenga el entorno del área del proyecto. Soluciones sensibles al contexto tendrán en consideración los usos del suelo contiguo, los desarrollos residenciales y las zonas de bosques al oeste y Rock Creek Park al este. Las mejorías en el corredor vial considerarán todos los medios de transporte incluyendo bicicletas y peatones.

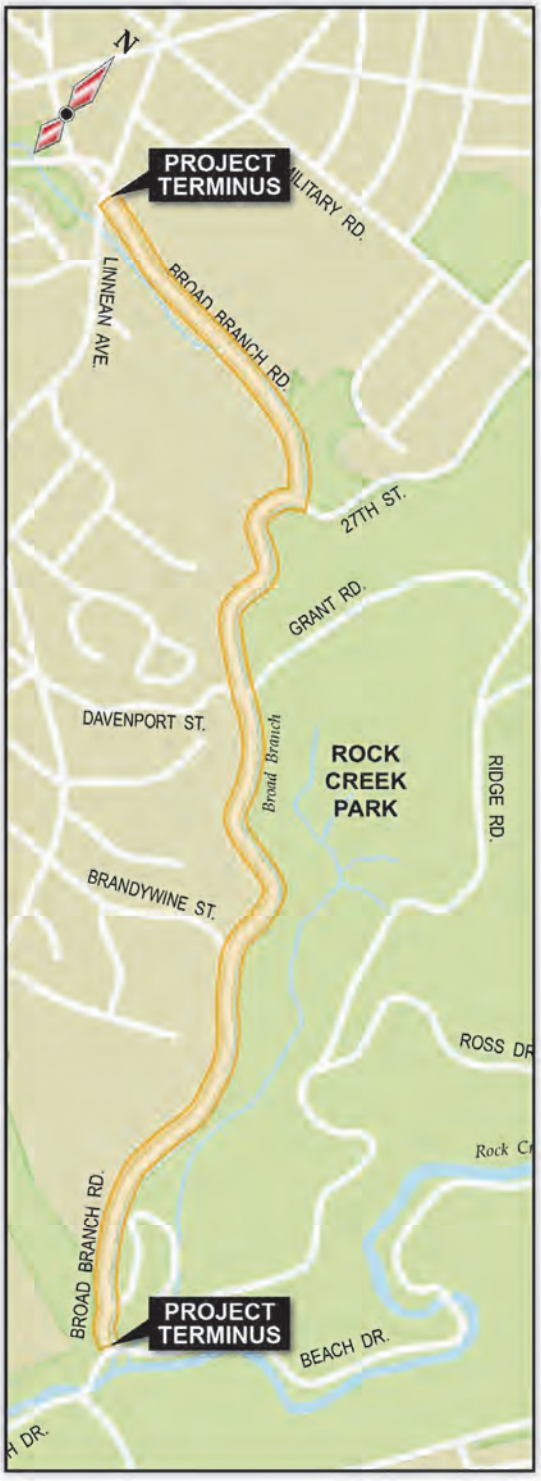
PROPÓSITO DE LA AUDIENCIA

El propósito de la audiencia de esta noche es comprometer al publico con el desarrollo del proyecto y darle la oportunidad de brindar comentarios acerca de este así como también de las alternativas que están siendo consideradas. Planos que demuestran los conceptos de ingeniería así como exposiciones con información técnica adicional serán revisados con los asistentes a la audiencia. La audiencia también servirá como medio para conocer a las personas interesadas en la preservación de estructuras históricas y otras características del corredor vial.

OBJETIVOS DEL DISEÑO

Para poder desarrollar los conceptos de las mejorías, el equipo del proyecto estableció un grupo de objetivos que consideran los comentarios de las agencias y el publico recibidos durante el proceso inicial. Estos objetivos fueron usados para guiar al equipo en el desarrollo de los conceptos y opciones que mejor satisfacen las necesidades y requerimientos del proyecto.

- Crear una vía segura para todos los modos de transporte - autos, bicicletas y peatones
- Manejar efectivamente el curso de aguas lluvia
- Evitar / minimizar el uso de tierras del parque permaneciendo dentro de la propiedad de DDOT mientras sea posible
- Preservar y proteger los recursos ambientales - creados y naturales
- Utilizar materiales y diseños sensibles con el medio ambiente y que mantengan el contexto del área del proyecto



1

ALTERNATIVAS

Tres alternativas candidatas de construcción, mas una alternativa de no-acción fueron identificadas para una mas detallada evaluación. Cada una de ellas fue desarrollada para satisfacer los objetivos del proyecto minimizando a la vez los impactos ambientales. Las alternativas son descritas a continuación y las tres alternativas candidatas de construcción han sido ilustradas en las paginas siguientes.

No Acción - Alternativa 1

En la Alternativa de No Acción, las mejorías a Broad Branch Road incluirían actividades menores de restauración (seguridad y mantenimiento de rutina) que mantendrán la continua operación de la vía existente. Aunque la Alternativa de No Acción no cumple con el propósito y necesidad del proyecto, esta brinda una base para comparar las consecuencias ambientales de las Alternativas Candidatas de Construcción.

Alternativa Candidata de Construcción 2

La Alternativa 2 representa el ancho mínimo de vía que satisface el propósito y necesidad del proyecto. A lo largo de la total longitud de Broad Branch Road, esta alternativa consta de 2 carriles de 10 pies de ancho con sardinel y cuneta estándar en ambos lados de la vía. Una nueva intersección tipo T esta siendo propuesta en Brandywine Street. Una nueva acera de 5 pies de ancho será suministrada en el lado oeste de la vía, desde Linnean Avenue por aproximadamente 1,000 pies a lo largo de la zona verde. Muros de contención serán suministrados en ambos lados para mantener las mejorías propuestas dentro de la propiedad existente. La ubicación de los desembocaderos existentes de drenaje de tormentas será mantenida y el manejo de aguas lluvia será mejorado al suministrar bio-pantanos/jardines de lluvia donde el espacio lo permita en conjunto con bocatomas de calidad de agua. Opcionalmente, una acera de 5 pies de ancho puede ser instalada en el lado oeste desde Soapstone Creek hasta la entrada al estacionamiento al norte de Beach Drive.

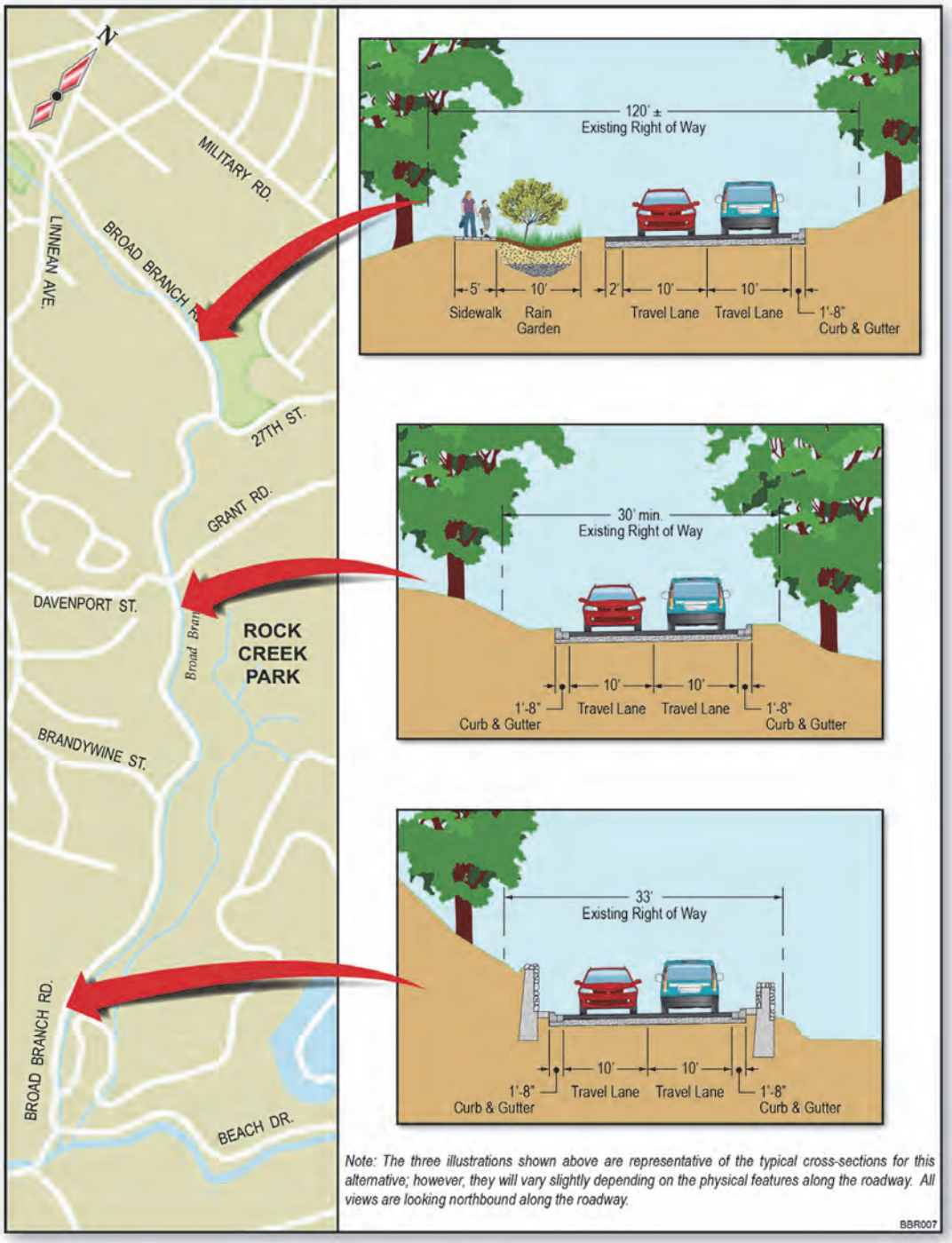
Alternativa Candidata de Construcción 3

La Alternativa 3 consta de dos carriles de 10 pies de ancho con sardinel y cuneta estándar en ambos lados a lo largo de toda la vía. Una nueva intersección tipo T esta siendo propuesta en Brandywine Street. Esta alternativa también tendrá una acera de 6 pies de ancho en el lado oeste por toda la longitud de la vía. Una franja verde de 4 pies separará la acera y la vía en varias secciones. Propiedad adicional será requerida para acomodar la acera y franja verde propuestas. Muros de contención serán suministrados en ambos lados de la vía para minimizar pendientes inclinadas. La ubicación de los desembocaderos existentes de drenaje de tormentas será mantenida y el manejo de aguas lluvia será mejorado al suministrar bio-pantanos/jardines de lluvia donde el espacio lo permita en conjunto con bocatomas de calidad de agua.

Alternativa Candidata de Construcción 4

La Alternativa 4 es la mas ancha de las alternativas del proyecto y consta de dos carriles de 10 pies de ancho, un carril de bicicleta de 4 pies de ancho en el costado este, y sardinel y cuneta estándar a ambos lados de la vía. Una nueva intersección tipo T esta siendo propuesta en Brandywine Street. Una franja verde de 4 pies separará la acera y la vía en varias secciones. Propiedad adicional será requerida para acomodar la acera y franja verde propuestas. Muros de contención serán suministrados en ambos lados de la vía para minimizar pendientes inclinadas. La ubicación de los desembocaderos existentes de drenaje de tormentas será mantenida y el manejo de aguas lluvia será mejorado al suministrar bio-pantanos/jardines de lluvia donde el espacio lo permita en conjunto con bocatomas de calidad de agua.

ALTERNATIVA CANDIDATA DE CONSTRUCCIÓN 2

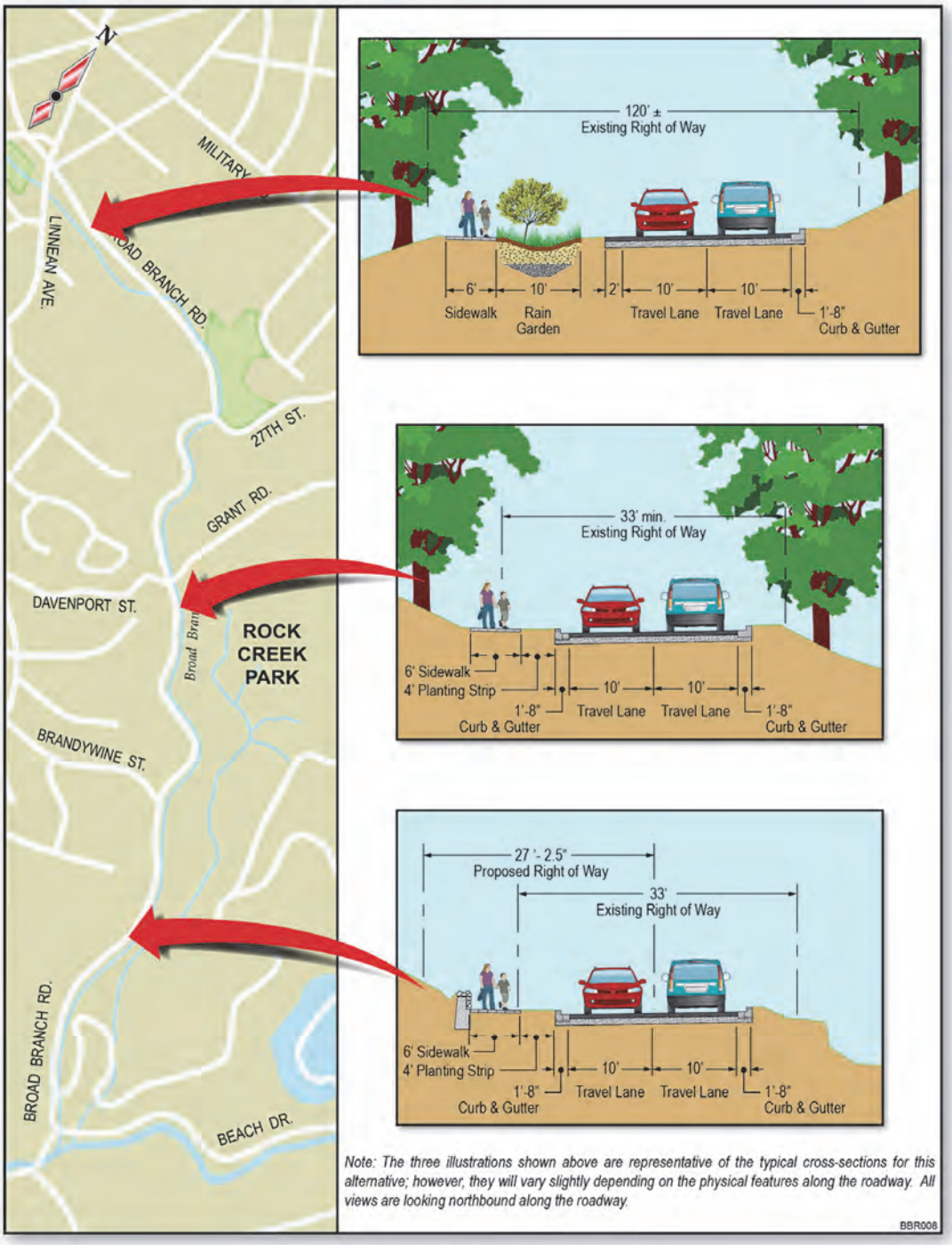


Note: The three illustrations shown above are representative of the typical cross-sections for this alternative; however, they will vary slightly depending on the physical features along the roadway. All views are looking northbound along the roadway.

BBR007

3

ALTERNATIVA CANDIDATA DE CONSTRUCCIÓN 3

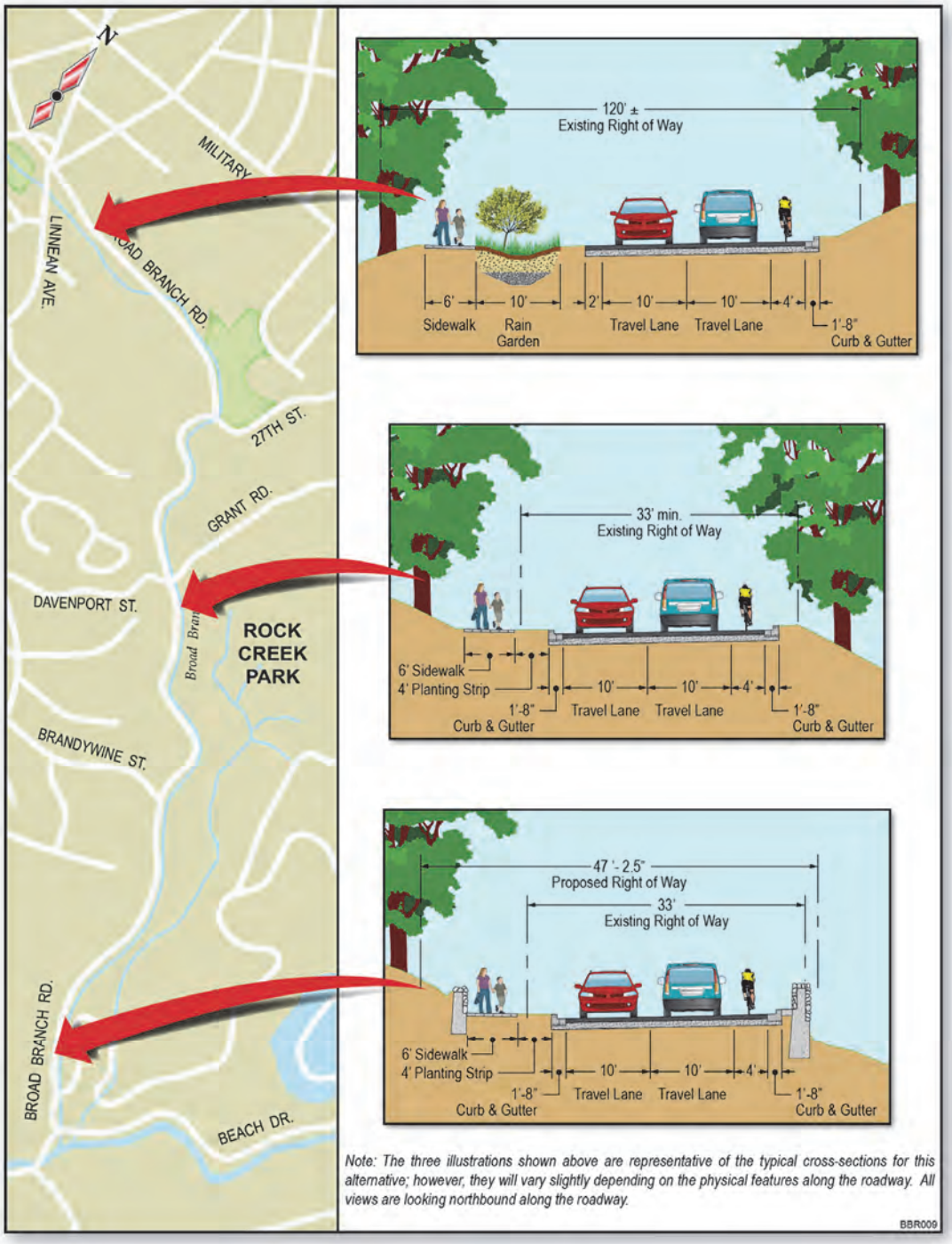


Note: The three illustrations shown above are representative of the typical cross-sections for this alternative; however, they will vary slightly depending on the physical features along the roadway. All views are looking northbound along the roadway.

BBR008

4

ALTERNATIVA CANDIDATA DE CONSTRUCCIÓN 4



Note: The three illustrations shown above are representative of the typical cross-sections for this alternative; however, they will vary slightly depending on the physical features along the roadway. All views are looking northbound along the roadway.

5

PROGRAMA DEL PROYECTO

Actividad	Fecha
Comienzo del Proyecto	Marzo 2011
Audiencia Publica del Alcance del Proyecto	Julio 2011
Alternativas Iniciales	Verano 2012
AQUÍ VAMOS Audiencia Publica de las Alternativas	Otoño 2012
Valoración Ambiental	Invierno 2013
Audiencia Publica	Primavera 2013
Documentación de la Decisión	Verano 2013

DIGANOS LO QUE PIENSA

Hoy

- Llene una hoja de comentarios
- Hable con un reportero

Email

BroadBranch@parsons.com

Correo

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

Sitio Web del Proyecto

www.BroadBranchRdEA.com

DDOT esta comprometido a asegurar que nadie este excluido de participar o ser negado de sus proyectos, programas y servicios a causa de raza. color, origen nacional o sexo, como esta determinado en el Titulo VI del Acta de Derechos Civiles de 1964 o a causa de discapacidades como lo determina el Acta de Americanos con Discapacidades.

Gracias por su interés y participación en este proyecto.

6

Departamento de Transporte del Distrito
55 M Street, SE
Washington, DC 20003
www.ddot.dc.gov

Broad Branch Road

COMMENT SHEET

November 8, 2012

Thank you for participating in tonight's meeting. Please take a few moments to complete the following questions. In order for your comments to be included in the meeting record, you may either leave your completed comment sheet at the designated location or it may be stamped and returned by mail to the addressee on the reverse side.

What do you think are the most needed improvements to Broad Branch Road? Improvement elements can include the roadway itself, traffic calming, stormwater management, sidewalks, bicycle lanes, crosswalks, etc.

_____

_____

_____

Are there other concerns and issues that you think should be addressed? These can include community concerns, environmental resources, aesthetics and other land use and transportation issues.

_____

_____

_____

Which elements of the alternatives presented today, do you think best satisfy the needs of the project and are in keeping with the project setting?

_____

_____

Please provide any additional comments and recommendations including those related to the public meeting.

_____

_____

_____

Please provide your name and address ***(optional)***

Name: _____ Address: _____

Email: _____ _____

☐ Please check if you would like to be added to the project mailing list.

DDOT is committed to ensuring that no person is excluded from participation in, or denied the benefits of, its projects, programs, and services on the basis of race, color, national origin, or gender, as provided by Title VI of the Civil Rights Act of 1964 or on the basis of disability as provided by the Americans with Disabilities Act.

Thank you for your comments.

District Department of Transportation

ONE CITY

U.S. Department of Transportation
Federal Highway Administration

STAPLE OR TAPE HERE

FOLD HERE

RETURN ADDRESS:

PLEASE PLACE POSTAGE HERE

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

FOLD HERE

STAPLE OR TAPE HERE

Broad Branch Road

HOJA DE COMENTARIOS

Noviembre 8, 2012

Gracias por su participación en la audiencia de hoy. Por favor tome un momento para responder las siguientes preguntas. Para que sus comentarios sean incluidos en los registros de la audiencia, por favor deje la hoja de comentarios en el lugar designado, esta también puede ser sellada y enviada por correo a la dirección en el respaldo.

Cuales cree usted que son las mejorías mas necesitadas en Broad Branch Road? Los elementos a mejorar pueden ser la vía misma, disipación del trafico, manejo de aguas lluvia, aceras, carriles de bicicletas, cruces peatonales, etc.

_____

_____

_____

Existen otras preocupaciones o asuntos que usted cree que deban ser tratados? Estos pueden ser preocupaciones de la comunidad, recursos ambientales, estética, usos del suelo o asuntos de transporte.

_____

_____

_____

Que elementos de las alternativas presentadas hoy cree usted que satisfacen mejor las necesidades del proyecto y mantienen su entorno?

_____

_____

Por favor suministre comentarios o recomendaciones adicionales incluyendo aquellas relacionadas con la audiencia publica.

_____

_____

_____

Por favor suministre su nombre y dirección ***(opcional)***.

Nombre:_____ Dirección: _____

Email: _____ _____

☐ Por favor marque aquí si desea ser agregado a la lista de correo del proyecto.

DDOT esta comprometido a asegurar que nadie este excluido de participar o ser negado de sus proyectos, programas y servicios a causa de raza. color, origen nacional o sexo, como esta determinado en el Titulo VI del Acta de Derechos Civiles de 1964 o a causa de discapacidades como lo determina el Acta de Americanos con Discapacidades.

Gracias por sus comentarios.

d. District Department of Transportation

ONE CITY

U.S. Department of Transportation
Federal Highway Administration

PEGUE AQUI

DOBLE AQUI

REMITE:

COLOQUE SELLO POSTAL AQUI

Stephen Walter
Parsons Transportation Group
100 M Street, SE, Suite 1200
Washington, DC 20003

DOBLE AQUI

PEGUE AQUI

J PUBLIC MEETING TRANSCRIPTS

The following is a record of the oral comments received during the public information meetings.

Two individuals provided testimony at the July 13, 2011 scoping meeting and six individuals provided testimony at the November 8, 2012 alternatives meeting. Their statements are presented in this appendix.

PUBLIC SCOPING MEETING

BROAD BRANCH ROAD, N.W.

CHEVY CHASE COMMUNITY CENTER
5601 CONNECTICUT AVENUE, N.W.
WASHINGTON, DC 20015

6:30 p.m. through 8:30 p.m.

July 13, 2011

OLENDER REPORTING, INC.
1100 Connecticut Ave., NW, Suite 810, Washington, DC 20036
Washington: (202) 898-1108 / Baltimore: (410) 752-3376
Toll Free: (888) 445-3376

C O N T E N T S

- - -

OLENDER REPORTING, INC.
1100 Connecticut Ave., NW, Suite 810, Washington, DC 20036
Washington: (202) 898-1108 / Baltimore: (410) 752-3376
Toll Free: (888) 445-3376

P R O C E E D I N G S

MR. WHITLE: And what do you want with that?

UNIDENTIFIED SPEAKER 1: If it was a bike path --

UNIDENTIFIED SPEAKER 2: Um, I guess your, uh, address --

MR. WHITLE: So I'll give you my e-mail. How's that?

UNIDENTIFIED SPEAKER 2: Whatever you --

MR. WHITLE: Tom9754@verizon.net. And an ANC commissioner 3-F.

I have been a resident of this area for about 20 years, ridden this area of Broad Branch Road often during that period, am very pleased with the initiative to make the corrections necessary to, um, make the road truly useable and safe.

And I would particularly be concerned that there be enough space in the roadway and cart way to include a bicycle lane so that there may be a movement of people by that means as well

as walkers, who at this time have no room on the road.

Um, I think that an accelerated effort like this is very commendable, but I would be concerned about people who don't want any change, number one. And, number two, who are only focusing on the speed of traffic. And the fact is that the speed of traffic must be corrected and reduced. Too many people driving on that road as if we were part of the Swiss Alps. So I feel that this is a great initiative, but we better not just succumb to the don't do it NIMBY people and have a very dangerous situation continue. It's dangerous now. It must be corrected.

And I think that's about -- that'll do it. Okay?

MR. ROSENBERG: What would you like me -- okay. Sure.

Okay. My name is Eric Rosenberg, E-R-I-C, R-O-S-E-N-B-E-R-G. And I live at 3511 Patterson Street, N.W. in D.C. I'm speaking as a

private citizen but also I'm a member of the D.C. Bicycle Advisory Council, uh, representing Michael Brown who is the at large City Council Member, but living in the neighborhood, I'm obviously concerned on the personal level.

My issue with this, um, specific project is, uh -- my concerns, rather, are, uh, with regards to the safety of, uh, bicyclists and others who use the road. The road is in bad shape and is in consistently bad shape. Uh, there are drainage issues, erosion issues, um, that make the road unsafe, uh, for both drivers and for others, uh, specifically bicyclists.

Um, there are a lot of -- the roads, uh -- the nature of the road in terms of its -- um, its route has a lot of blind spots so that when you're traveling, you don't necessarily see traffic coming towards you until the last moment. And that's unsafe for everyone.

Speed is an issue. When the road was repaid approximately two years ago, um, the speed -- the average speed appeared to go up for

drivers. Um, and as a result, again, safety is the number one issue for my concern. Um, there's no bailout area because the road is so narrow, certainly for, uh -- for bicyclists or pedestrians.

I do not believe that it is worth the effort of DDOT to, um, accommodate pedestrians other than making the entrances and exits to the park on the various bridges, um, marked clearly for pedestrians and have some sort of speed control of some nature, a traffic calming, at those areas, um, so that drivers will know that there are -- there's a potential of pedestrians crossing, um, Beach Road -- uh, Beach Drive at -- at those spots.

But I don't believe that sidewalks are necessary or of any particular value or use. Um, hikers and, um -- uh, runners, um, I would presume -- or it's my understanding and my observation that they are more interested in getting into the park, um, and running in the park and using the park as opposed to bicyclists.

Um, the trails that are on the inside of the park, um, are -- because they're somewhat hidden, they are not well maintained. Certainly, um, there's a lot of debris. Um, they're not -- and when it gets wet, it gets very dangerous with leaves and all of that.

So, uh, my, uh, hope is that the bicyclists will be addressed, um, in the redevelopment of this road. I would -- I would hope that a bike lane would be installed, um, on the west side of the park. Maybe you could -- on the west side of the road, rather.

Maybe you could flatten out some of the curves. That would be great. Another suggestion would be to put flex posts, which, uh, are similar to the ones that are on Pennsylvania Avenue, as a demarcation between the traffic -- the automobile traffic and the bicycle traffic. It doesn't have to be everywhere, but certainly with the corners and the intersection, uh, or the curves that are significant that they would be there so that the -- that the cars who tend to

drift in these narrow roads over the center median -- not that they would go all the way on the other side, but it would give some sense of protection to a bicyclist who will not otherwise ride on that, um -- in that area if there's no sense of -- a feeling of safety there.

Um, again, speed is -- is -- is an issue, and there should be some way to do some traffic calming, be it straightening out the road, which I don't believe is practical, or speed humps or bumps, or something, uh, to slow down the traffic.

Um, the intersections tend to be, uh, pretty precarious -- a lot of accidents appear to happen on the 27th Street intersection because there are so few of them. And, again, there are a lot of blind spots there. Um, and it's relatively dark, uh, most of the time. It's not brightly lit. And I don't believe it should be brightly lit, um, but again, to use what resources are available and the space that's available would make sense.

Again, the idea of a bike -- a bike lane with flex posts in either the entire area or in an appropriate area I think would work quite well. Um, on the straighter parts maybe not because that's where it's -- since the bike lane would -- I do not believe is big enough to accommodate, uh, bicycle traffic in both directions simultaneously -- someone would have to, you know, give way to the other -- give the right-of-way to the other bicyclists, uh, in the other direction. And if you have flex posts all the way around, um, if they're too close together, there's no place for the -- for one of them -- you know, one to go and the other to pass.

So, those are my comments. Thank you very much.

(Conclusion of public comments.)

ENVIRONMENTAL ASSESSMENT
BROAD BRANCH ROAD, N.W.

METHODIST HOME OF THE DISTRICT OF COLUMBIA
4901 CONNECTICUT AVENUE, NW
WASHINGTON, D.C. 20008

6:30 p.m. to 8:30 p.m.
Thursday, November 8, 2012

OLENDER REPORTING, INC.
1100 Connecticut Avenue NW, #810, Washington, DC 20036
Washington: (202) 898-1108 / Baltimore: (410) 752-3376
Toll Free: (888) 445-3376

C O N T E N T S

ALSO PRESENT

Paul Hoffman - Parsons Corporation

Stephen Walter - Parsons Corporation

OLENDER REPORTING, INC.
1100 Connecticut Avenue NW, #810, Washington, DC 20036
Washington: (202) 898-1108 / Baltimore: (410) 752-3376
Toll Free: (888) 445-3376

P R O C E E D I N G S

MR. MCGRATH: Dorn McGrath, 2710 Brandywine, Northwest, Washington, D.C.

THE REPORTER: Feel free to proceed.

MR. MCGRATH: Okay. I will proceed to declare the engineers supervising this project are very helpful. They are not the same ones that represent Anacostia and I have yet to be informed about any hearing in Anacostia concerning the Historic Preservation Act, section 106. And I am the former chairman of the Committee of 100 and also the designated person to receive such information from the DDOT with respect to section 106.

And I have received nothing. I have had nothing for a year from the MDOZP (ph) concerning this project, their project in Anacostia, street car project. Not a road widening like this is.

And this is another group of engineers much more suitable to the task they have.

[WHEREUPON, THE STATEMENT OF DORN MCGRATH WAS CONCLUDED]

OLENDER REPORTING, INC.
1100 Connecticut Avenue NW, #810, Washington, DC 20036
Washington: (202) 898-1108 / Baltimore: (410) 752-3376
Toll Free: (888) 445-3376

MS. RAY: Mary Beth Ray. 4526 29th Street, Northwest, Washington, D.C. 20008.

THE REPORTER: Please proceed.

MS. RAY: Oh, okay. So I'll be brief. One of the reasons that I and my family chose to live in Forest Hills is because of the proximity to Rock Creek Park. And it's extremely frustrating because there's no save access for pedestrians or cyclists to be able to get from our house into the park.

So, I was really excited to see alternatives three and four, in particular because it would provide safe access into the park.

And so, we would just really encourage the Park Service and DDOT to do whatever it takes to construct both a sidewalk and a bicycle lane, if possible and if not both a cycling lane and a sidewalk then at the very least, a wide sidewalk that could be used for either cycling or pedestrians so that people across the area can enjoy one of the most beautiful parks in the

country.

[WHEREUPON, THE STATEMENT OF MARY BETH RAY WAS CONCLUDED]

MR. THOMAS: Samuel Thomas. 4600 Connecticut, apartment number 512,

THE REPORTER: The zip code?

MR. THOMAS: It's 20008. I'm on? Okay. I just wanted to start out by saying I've been planning to come to this meeting since I heard about it and coincidentally a friend of mine from college, Gelseigh Karl-Cannon was killed, struck by a motorist riding her bicycle yesterday in Denver, Colorado. That further energized me to come out here and emphasize how critically important bicycle and pedestrian safety in our neighborhoods is.

Broad Branch Road, in particular, I'm quite familiar with. I do not own a car. My transportation is all by foot and by bicycle. It's a very narrow and windy road. Of course I would like to see bicycle lanes, or at least sharrow markings put on the road.

Even more important than bicycle safety on Broad Branch, I believe, is pedestrian safety. It's located in a residential neighborhood and next to a national park that gets frequent use by urban citizens in Washington, D.C. And in particular, the Soapstone Valley hiking trail which is supposed to connect to the Rock Creek hiking trail system, dumps pedestrians, currently, right onto Broad Branch Road in a very narrow and windy spot where they have to walk along the roadway with no shoulder to connect to the other trails.

I think it's really critical that DDOT and the city take responsibility and make this a safe place for pedestrians so they feel encouraged to use the facilities.

So, please consider the options three and four that include sidewalks along the length of Broad Branch Road. They're very important and bicycle lanes would be an improvement as well.

Thank you.

[WHEREUPON, THE STATEMENT OF SAMUEL THOMAS WAS

CONCLUDED]

MR. KLOSSNER: You ready? My name is Christian Klossner. I live at 4501 Connecticut Avenue, Washington, D.C., 2008.

My primary concern is a save connection from the base of Soapstone Valley to beach drive. I live at the head of Soapstone Valley. I enjoy hiking there with my six year old son.

The connection to the Pierce Mill area and the parking lot or other trails is incredibly unsafe and to be quite frank, my wife limits my going there with my son.

My secondary concern is the usability between Brandywine and Beach Drive for bicycles. It is the easiest way into the park from my neighborhood for a bicycle yet that stretch of road is incredibly unsafe. There is a curve that people come around very quickly and you are exposed to traffic coming up behind you before you can connect to Beach Drive which is heavily used by bicyclists, especially on weekends.

I also use Broad Branch for driving.

Most frequently from Beach Drive to Brandywine but also, sometimes, to Davenport as an access to the nature center. As a driver, I would be happy to accept a number of restrictions on my ability to travel.

I should say, viewing the four options, my preference is option four but as all three have, at least, a sidewalk from Soapstone Valley to beach drive, I find them all an improvement over the current system. And the first option, no build, is completely unacceptable.

In addition to the actual building structures which I understand would possibly involve purchasing rights of way from private property, I think there are other structures that can be put in place to slow down traffic on the road to make it safer for pedestrian and bicyclist.

I would be in favor, even as a driver, be in favor of speed bumps, appropriately designed to allow for the passage of bicyclists without going over a bump. I would be in favor of a

heavily reduced speed limit, as low as 15 miles per hour. And I would encourage the city to put speed cameras on the road to enforce it.

The major conflict I see between bicyclists and drivers is drivers becoming impatient when bicyclists are heading northbound at a slow rate of speed. I think that if there was an enforced speed limit, that was approximating what a bicyclist would do that that would reduce tensions and make for a happier and safer ride for all. Especially considering that the largest danger is that the bicyclists would cause motorist to pass into oncoming traffic.

So again, as both a pedestrian user, as a bicycle user and as a driver I am strongly in favor of safer access from Brandywine to Beach Drive and would accept restrictions on my motorist use.

Thank you.

[WHEREUPON, THE STATEMENT OF CHRISTIAN KLOSSNER WAS CONCLUDED]

MR. KATZ: My name is Kenneth Katz

and the address is 3411 Fessenden Street, Northwest, 20008. It's actually right behind us, Fessenden Street.

THE REPORTER: Please proceed.

MR. KATZ: Well I would just like to say, certainly from my point of being a pedestrian, a driver, cyclist and a neighbor I am vastly in favor of alternative four or the idea of alternative four, which does indeed create a safe facility for all travel modes as best as possible.

I do think one small addition would be, it's a little odd that there is a one-way bicycle lane proposed which does make sense in terms of geography because that bike lane is for the uphill lane and the direction in which there is no bike lane is for the downhill lane where you would, even on a bike, be going pretty close to the speed limit.

However, it just strikes me that perhaps a better idea would be not to have the bike lane at all and to instead have what is a sidewalk

extended in width by a couple feet and turn that into a multi-use trail.

But in any case, my belief is that alternative four will definitely increase use of neighbors. Just having a safe place to walk and ride along in Broad Branch will probably bring many, many people into the park who live Northwest of where Broad Branch hits Beach Drive because right now there is no way to get into the park, except by driving. At least no safe way. So I think this would be wonderful.

Thank you so much.

[WHEREUPON, THE STATEMENT OF KENNETH KATZ WAS CONCLUDED]

MR. CALDWELL: My name is William Caldwell. My address is 4660 Broad Branch Road, Northwest.

THE REPORTER: 20008?

MR. CALDWELL: Yes.

THE REPORTER: Please proceed.

MR. CALDWELL: My comment is that I prefer option one. One of the reasons for that

is that it preserves the character of Broad Branch road as having, sort of a rural feel to it, country road. It's an historic road and it's the edge of the national park. It's really beautiful. I think it should stay that way.

It's a nice idea to have sidewalks and bike trails and swales and all that and I don't have any objection to those things except that, in order to do it, it's going to require excavation on the west side. It's going to require cutting down hundreds of trees and building retaining walls, relatively high retaining walls in order to widen the right-of-way. And I really don't think that's a good idea. It's going to pretty much destroy the character of the road. And it's certainly an expensive solution so I'm opposed to that.

And, I also think that the notion that it's necessary for safety to put up the various retaining walls between the road and the creek is kind of excessive. I don't think that's -- I don't think there really have been many instances

that, where there have been problems because of that.

But anyway, I wanted to comment, which is that, one of the reasons that the road is damaged by water is -- the primary reason, and I've seen this for twenty years. It's not because of the water coming down from the hillside on the west side onto the road and undercutting the road. It's the, in a heavy rain the water fills Broad Branch and it overflows its banks in some places and it just turns it into a tributary. It just rolls down Broad Branch and that's a very violent flow and that's what damages the road surface.

So, your engineering should address how to keep Broad Branch within its banks, at least in the crucial places where there are little bottlenecks where -- gravity -- it has no place to go and it has to flow up onto Broad Branch Road.

So that would be my suggestion and I think that's all I have to say.

Thank you very much.

OLENDER REPORTING, INC.
1100 Connecticut Avenue NW, #810, Washington, DC 20036
Washington: (202) 898-1108 / Baltimore: (410) 752-3376
Toll Free: (888) 445-3376

[WHEREUPON, WILLIAM CALDWELL RETURNS FOR FURTER COMMENT]

MR. CALDWELL: I'd like to amend my remarks just a tad.

I do have one further comment and that is that I think the -- there has not been sufficient public notice about this project. Even tonight I kind of expected that there would be a representative from the Department of Transportation that would make a presentation about what the various options are. And I found it quite difficult to get information about each of them, not that the people who are here aren't accessible, they are. But it's a one-on-one situation and it's not an opportunity for the group to hear what's going on, to hear answers. And so, there's very little information that's actually getting out.

So I think that does a disservice. I think there should be another meeting. A public meeting where, you know, there are many, many people who are interested in this. They should

have the opportunity to hear a coherent presentation of what the three basic options are and to be able to ask questions that everybody can hear so that they -- people don't all think of the same question at the same time.

So, that would be really useful and would make it possible for people to actually understand what's going on, what the issues are in this project. You know, the last time the Department of Transportation tried to do this, which was 10 or 12 years ago, there was a huge amount of public interest in it. There were hundreds of people going to ANC meetings about it and you shouldn't be surprised if there's a lot of interest in it this time.

And I know we're only into the process, it's not over yet. You haven't made your decisions but, people need to know what's going on before you make your decisions so they can have some opportunity to tell you what they think about it and to involve their representatives.

Thank you.

[WHEREUPON, THE STATEMENT OF WILLIAM CALSWELL WAS CONCLUDED]

MR. HOFFMAN: The time is now 8:31 and we're done.

[WHEREUPON, AT 8:31 p.m., THE PUBLIC MEETING WAS CONCLUDED.]

District Department of Transportation
55 M Street, SE
Washington, DC 20003
www.ddot.dc.gov