

ROCR

GIP Report

NPS Guardwall/Rail Inventory Program  
Rock Creek Park



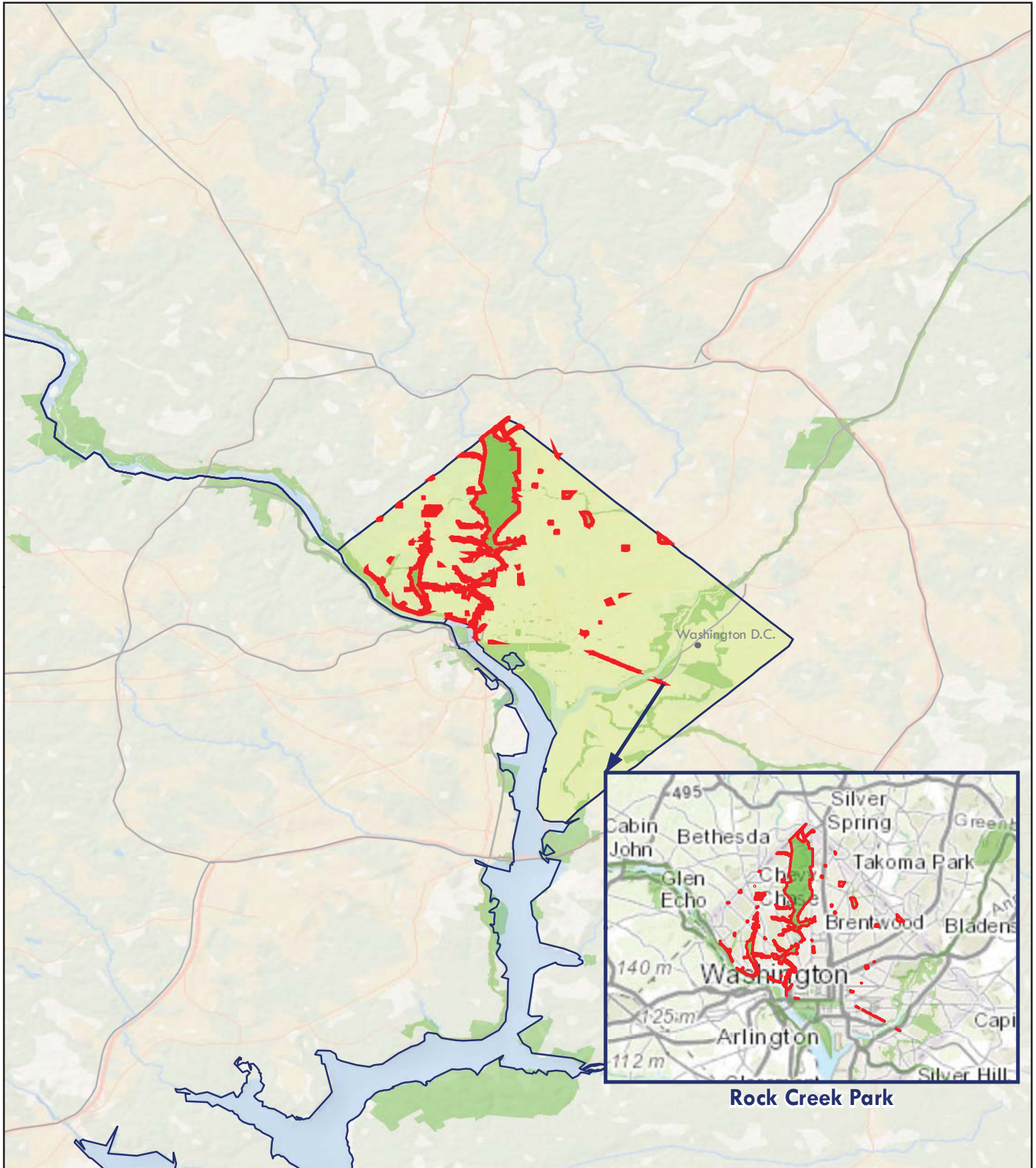
Federal Lands Highway  
Road Inventory Program

Prepared By:

Federal Highway Administration  
Eastern Federal Lands Highway Division  
Road Inventory Program (RIP)

Data Collection Date: November 2010  
Report Date: December 2015

# Rock Creek Park in District of Columbia



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community  
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# Introduction



Rock Creek Park



**Federal Lands Highway  
Road Inventory Program**

## Introduction

In support of the NPS Facility Management Software System (FMSS) asset management program, FHWA- contracted staff completed the Guardwall/Rail Inventory Program (GIP) inspections within selected National Park Service (NPS) units between 2010 and 2011. This inventory provides static information to FMSS regarding barrier characteristics such as height, length and location, as well as dynamic information about the condition of the barrier. In addition, when barrier deficiencies were identified, repair recommendations and estimated costs, suitable for use as FMSS work orders, were generated to bring the barrier back to its "new" condition.

In over 30 parks, numerous crashworthy barriers inspected maybe in poor condition by simply applying a new overlay of asphalt without milling previous layers. In instances such as this, basically the critical element of barrier height decreased as the elevation of the roadway increased. Resulting work orders were drafted to raise w-beam barriers or to remove and reset stone masonry barriers to their original design height.

This inventory provides static information and a condition assessment of each barrier inventoried. In addition, when barrier deficiencies were identified, repair recommendations and estimated costs were drafted to bring the barrier back to its "new" condition.

Drafted work orders have been classified as being either deferred maintenance or capital improvement. This classification is based on the type of work recommended, as defined below.

- *Deferred Maintenance* can be classified as repair or replace in kind. Work done to the barrier does not include any upgrading.
- *Capital Improvement* can be classified as upgrading part of or the entire existing barrier. Typically the upgrade will be from a non-crashworthy to a crashworthy device. Other examples of capital improvements would be the addition of a curb to improve drainage.

Care was taken to maintain the cultural significance of historic barriers located in the NPS. While historic traffic barriers likely would not withstand current crashworthiness performance criteria, they are considered by the NPS to be important resources for the historic and/or cultural value. Historic barriers may be "character defining features" that contribute to the cultural significance of historic roadways. As such, these barriers have resource value in and of themselves which may be somewhat independent from their functionality as barriers as previously defined. The consideration of both the crashworthiness and resource value of historic barriers was a significant challenge for the NPS and the FHWA when designing the GIP, to the point that for historic stone masonry barriers, the barrier height had to be more than 6-in below its design height before any work would be considered to deal with height issues. To preserve historic stone masonry barriers, typical drafted work orders for historic barriers were to remove and reset the barrier to the barrier's original design height on a concrete footer, as compared to replacing it with a similar crashworthy barrier.

This report is organized in a tiered approach from the broad park overview perspective (Tier 1) to a route overview perspective (Tier 2), then down to the details of each barrier (Tier 3). Tier 1 presents park barrier location maps and an overall park-specific summary narrative of the results of the guardwall/rail inventory program. Tier 2 presents route overview maps with associated barrier summary information. Tier 3 presents individual barrier information in a one-page detailed format, including a photograph of each barrier. Appendix A provides a condensed summary of guardwall/rail inventory definitions and assessment categories to assist in reading this report.

# Park Barrier Location Maps



Rock Creek Park

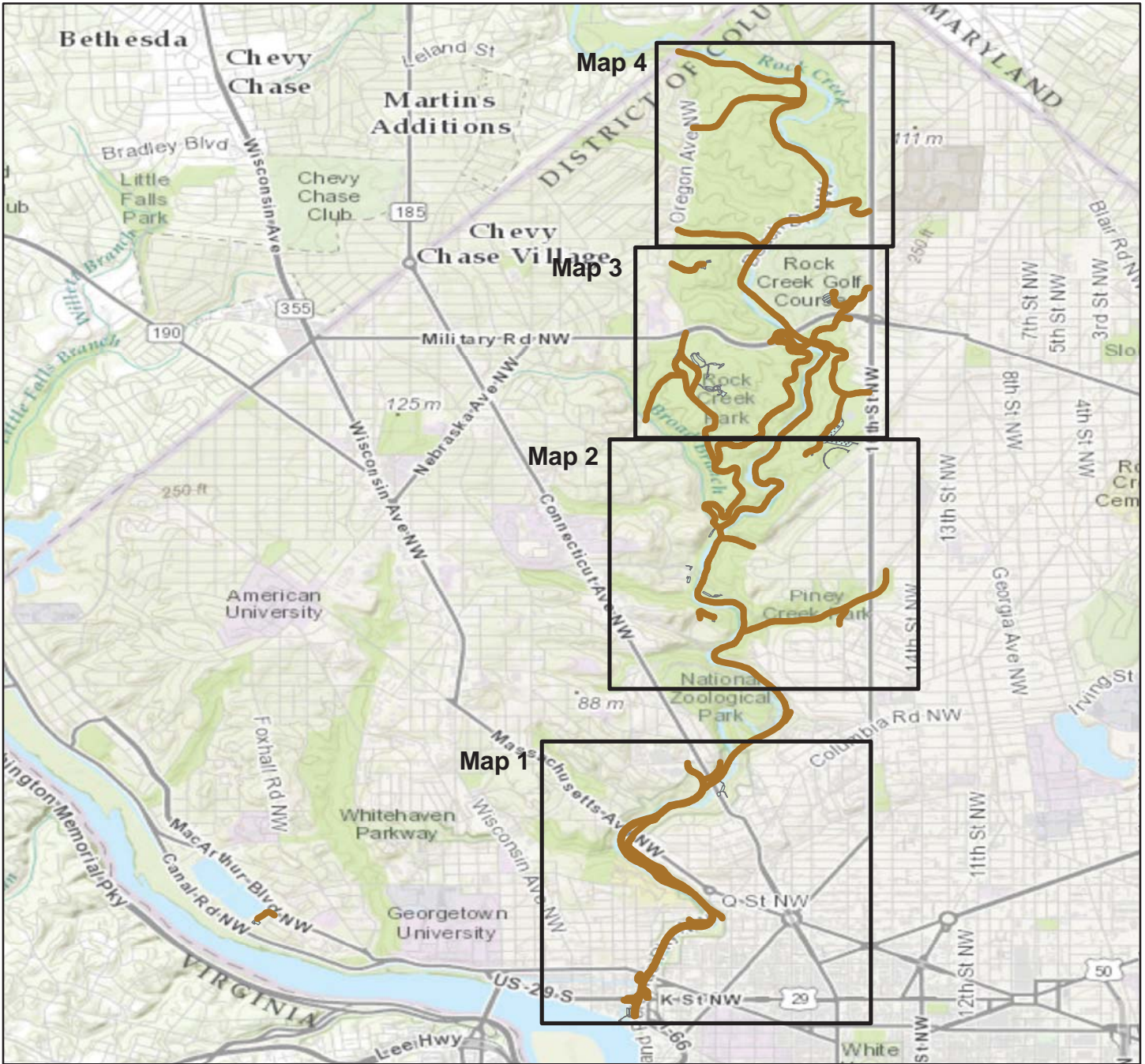


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# Rock Creek Parkway

## BARRIER LOCATION MAP

### Key Map



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

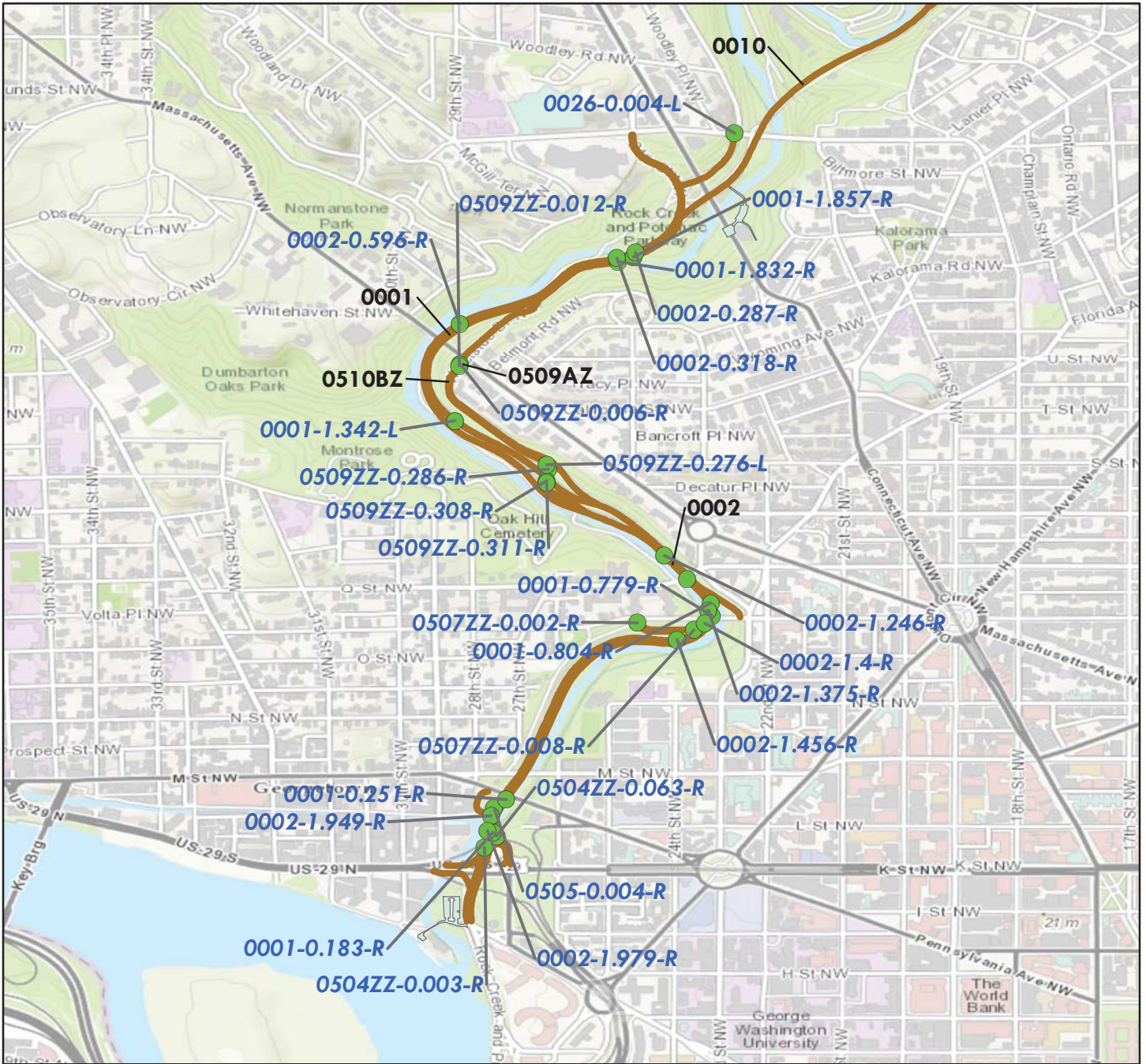
 RIP Collected Routes



# Rock Creek Parkway

## BARRIER LOCATION MAP

### Map 1



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

- Barrier Locations
- RIP Collected Routes

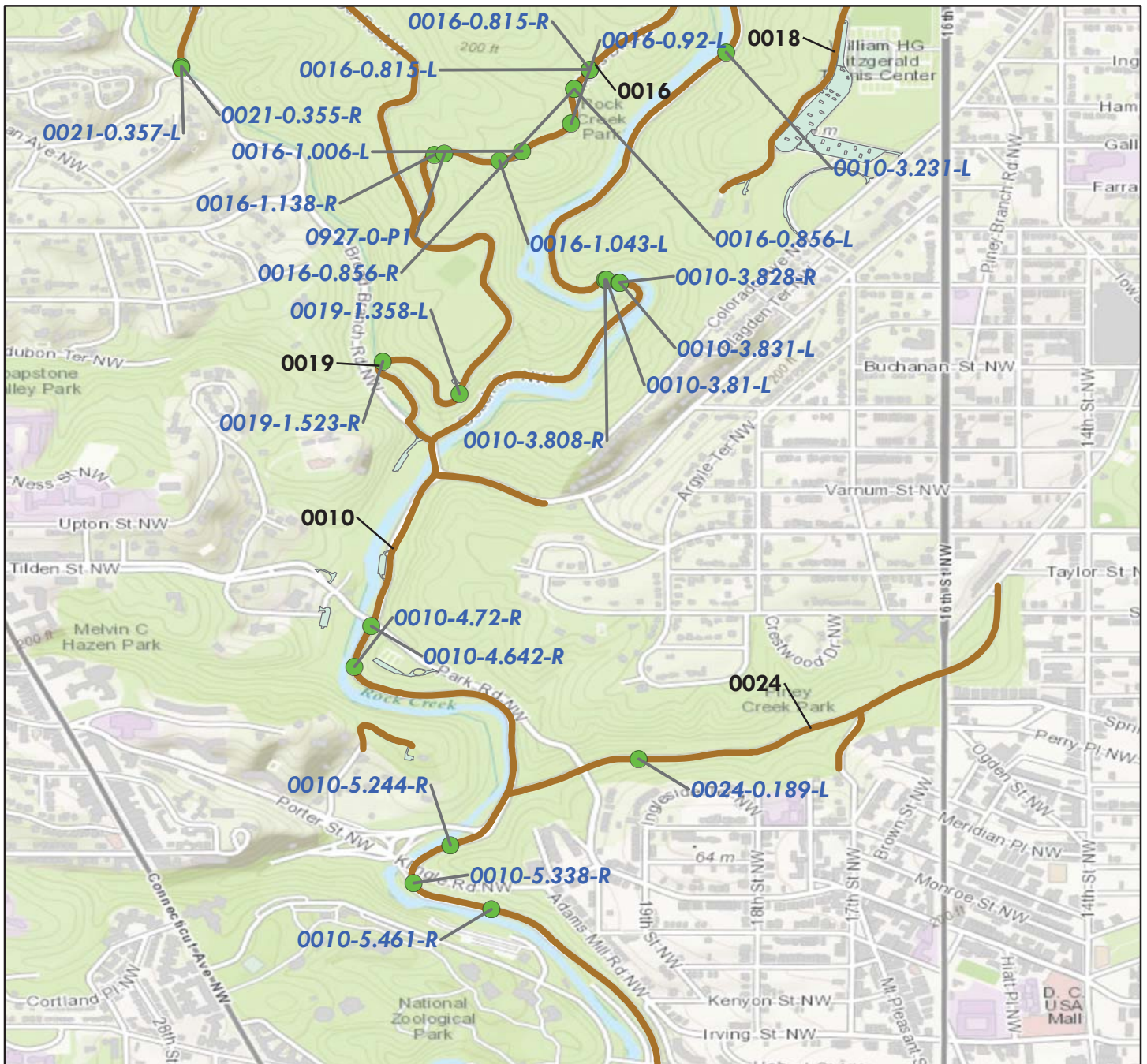




# Rock Creek Parkway

## BARRIER LOCATION MAP

### Map 2



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

● Barrier Locations

— RIP Collected Routes



# Rock Creek Parkway

## BARRIER LOCATION MAP

### Map 3



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

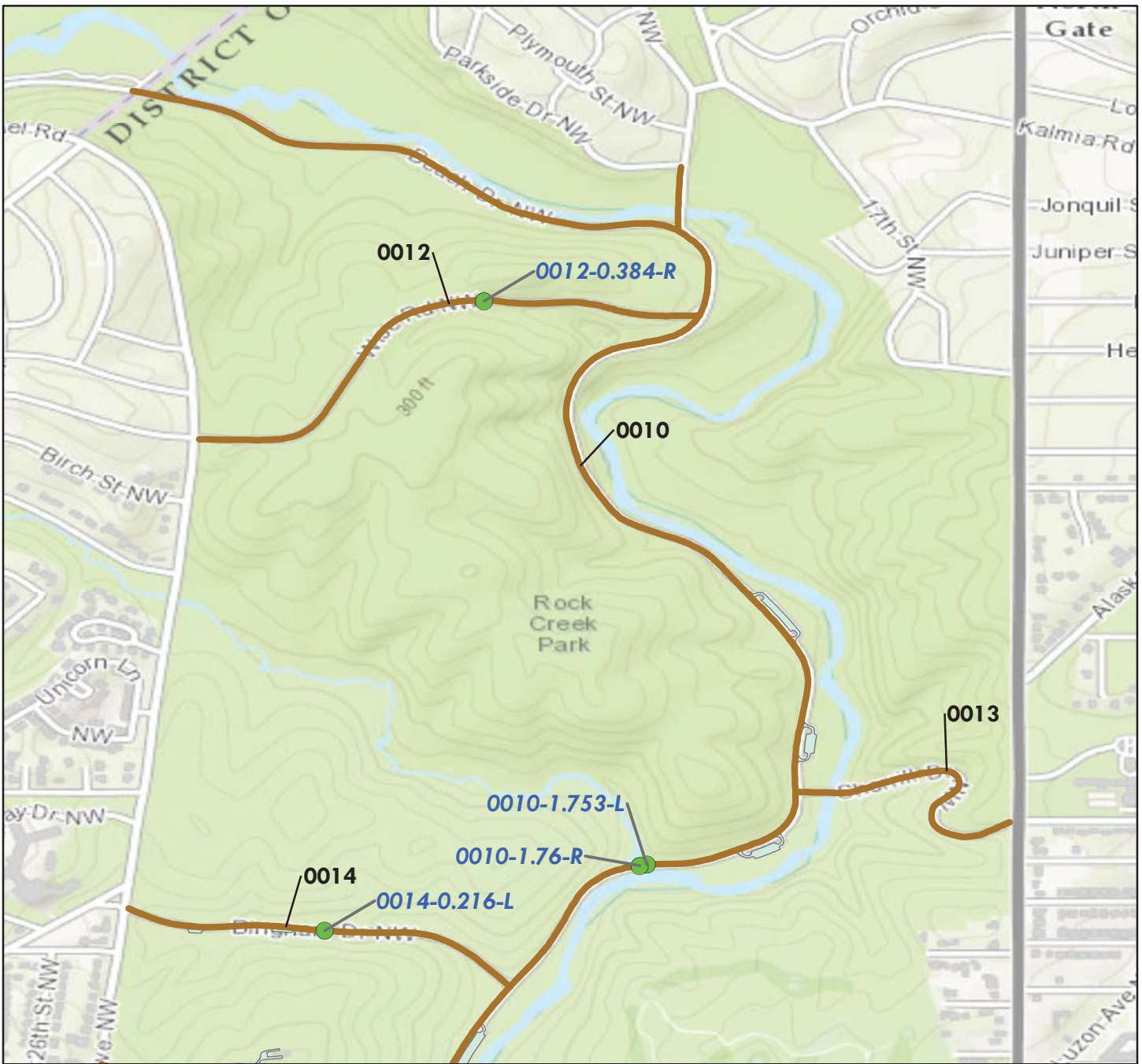
- Barrier Locations
- RIP Collected Routes



# Rock Creek Parkway

## BARRIER LOCATION MAP

### Map 4



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

● **Barrier Locations**

— **RIP Collected Routes**



# Tier 1 Park Barrier Overview



Rock Creek Park



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## Parkwide Summary: Rock Creek Park

Initial barrier inspections were conducted at Rock Creek Park in 2010, and encompassed all known barriers associated with Park roadways. In general, walls are not included in this assessment, but were inspected under a separate effort as part of the Retaining Wall Inventory Program (WIP).

All paved roadways and parking areas listed in the RIP Route Identification Report were inspected for barriers.

The following tables provide an overview of the findings of this inspection and assessment effort. In all, 77 barriers were inventoried on the routes listed below.

**Table 1: Number of Barriers by Route**

| Route Number | Route Name  | No. of Barriers |
|--------------|---|-----------------|
| 0001         | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND   | 7               |
| 0002         | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND   | 10              |
| 0010         | BEACH DRIVE NORTHWEST   | 17              |
| 0012         | WISE ROAD NORTHWEST   | 1               |
| 0014         | BINGHAM DRIVE NORTHWEST   | 1               |
| 0015         | JOYCE ROAD NORTHWEST  | 2               |
| 0016         | ROSS DRIVE NORTHWEST  | 14              |
| 0017         | MORROW DRIVE NORTHWEST  | 3               |
| 0019         | GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST   | 2               |
| 0021         | GRANT ROAD NORTHWEST  | 2               |
| 0024         | PINEY BRANCH PARKWAY NORTHWEST  | 1               |
| 0026         | CATHEDRAL AVENUE NORTHWEST  | 1               |
| 0504ZZ       | RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET   | 2               |
| 0505         | RAMP FROM S/B ROCK CREEK PARKWAY TO PENNSYLVANIA AVENUE   | 1               |
| 0507ZZ       | RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET | 2               |
| 0509ZZ       | SOUTH WATERSIDE DRIVE N/B & S/B   | 6               |
| 0511ZZ       | RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE ROAD NW TO MILITARY ROAD NW | 3               |
| 0927         | PICNIC GROVE #20 PARKING  | 1               |
| 0929         | PICNIC GROVE #21 PARKING  | 1               |

Due to the different GIP assessment criteria of barriers based on their intended use, barriers were classified as being either traffic barriers or non-traffic barriers.

- *Traffic* barriers are physical devices intended to keep vehicles or people from straying into dangerous or off-limits areas. For the purpose of this inventory, a traffic barrier is categorized as roadside hardware placed longitudinally, excluding pedestrian railing and fencing.
- *Non-traffic* barriers provide a physical delineation between public access areas and restricted or protected areas in locations such as a parking lot, viewpoint or turnout. **Non-traffic barriers which inhibit access of vehicles are included in this report; non-traffic barriers which only inhibit access of pedestrians or bicyclists are not included. For the purpose of this inventory, non-traffic barriers are guidewalls and guiderails. Note: rocks, stones, boulders, fences or curbs were excluded from this inventory.**

There are instances in parks where a single barrier can switch between being classified as a traffic barrier and a non-traffic barrier. Such instances typically occur at pullouts, where a traffic barrier along the road will continue through the pullout without interruption. In such instances, the traffic barrier and non-traffic barrier were assessed using different criteria. Due to the different criteria, the GIP database was designed to record the traffic barrier and non-traffic barrier as multiple distinct barriers, even though to the eye, they appear as one barrier. Other instances where a single barrier is split into multiple barriers would be when the barrier is placed continuously along two legs of an intersection, so that one portion of the barrier may be on one road and the remaining portion of the barrier is on a different road.

**Table 2: Number of Barriers by Function**

| Barrier Function | No. of Barriers |
|------------------|-----------------|
| TRAFFIC          | 75              |
| NON-TRAFFIC      | 2               |

The following table shows the barrier types that were inventoried and assessed.

**Table 3: Number of Barriers by Type**

| Primary Barrier Type                     | No. of Barriers |
|--|-----------------|
| Stone Masonry Without Concrete Core Wall | 32              |
| Steel-Backed Timber With Blockout        | 4               |
| Steel-Backed Timber Without Blockout     | 30              |
| Other: Timber Rail On Timber Posts       | 8               |
| W-Beam Strong Post                       | 3               |

The following table shows the number of barriers by one of four categories of recommended action along with associated work order costs and the number of barriers that are in each recommended action. All work order information is presented for individual barriers, even though some work orders were not accepted by the Park. Some work orders were later combined to simplify route deferred maintenance requests.

**Table 4: Number of Barriers by Recommended Action and Associated 2008 Cost**

| <b>Recommended Action</b> | <b>Repair Costs*</b> | <b>No. of Barriers</b> |
|---------------------------|----------------------|------------------------|
| No Action                 | \$0                  | 45                     |
| Monitor                   | \$0                  | 0                      |
| Repair                    | \$738,945            | 31                     |
| Replace                   | \$91,630             | 1                      |
| <b>Totals</b>             | <b>\$830,575</b>     | <b>77</b>              |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

The following table categorizes the number of barriers that fall into one of ten cost ranges, based on the prepared work orders. The locations, work descriptions, and cost of the recommended repairs for these barriers are listed by individual barrier in Tier 3 of this report.

**Table 5: Number of Barriers Grouped by Associated 2008 Cost**

| <b>Cost Range*</b>              | <b>No. of Barriers</b> |
|---------------------------------|------------------------|
| \$0                             | 45                     |
| \$1 - \$25,000                  | 30                     |
| \$25,001 - \$50,000             | 0                      |
| \$50,001 - \$100,000            | 1                      |
| \$100,001 - \$250,000           | 0                      |
| \$250,001 - \$500,000           | 0                      |
| \$500,001 - \$1,000,000         | 1                      |
| \$1,000,001 - \$2,000,000       | 0                      |
| \$2,000,001 - \$3,000,000       | 0                      |
| \$3,000,001 - \$4,000,000       | 0                      |
| <b>Total Number of Barriers</b> | <b>77</b>              |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

Data for end terminals was collected on the GIP data collection form and indicates if an end terminal meets current crashworthiness standards. End terminals are specially designed barrier ends that attenuate impacts to the ends of barriers. This is supplemental information that WASO designed into the inventory program.

A total of 40 end terminals were found on barriers at the Park. There are generally a greater number of end treatments than actual barriers because end treatments are located at both the beginning and end of each barrier.

# Tier 2 Route Barrier Overview



Rock Creek Park



**Federal Lands Highway  
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# Rock Creek Park

## ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND



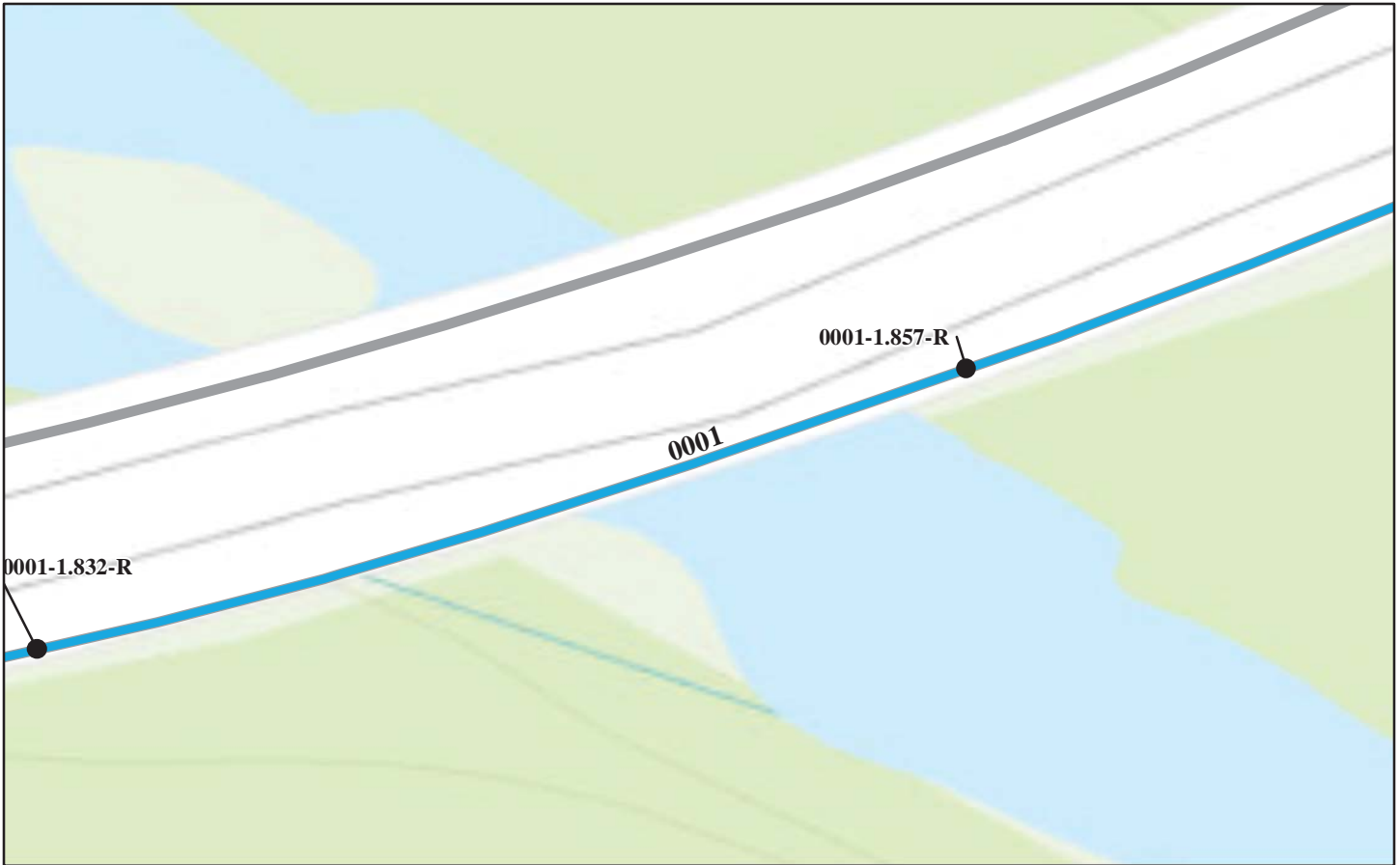
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                |                         |  | Begin                 | End            |                 |
| ROCR-0001-0.183-R<br>11/5/2010 | 85                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | NONE                  | NONE           | \$2,172.00      |
| ROCR-0001-0.251-R<br>11/5/2010 | 388                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | NONE                  | SBT/LOG FLARED | \$0.00          |
| ROCR-0001-0.779-R<br>11/5/2010 | 19                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE           | \$0.00          |
| ROCR-0001-0.804-R<br>11/5/2010 | 48                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE           | \$0.00          |
| ROCR-0001-1.342-L<br>11/5/2010 | 930                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS          | NONE                  | NONE           | \$91,630.00     |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0001-1.832-R<br>11/5/2010 | 41                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0001-1.857-R<br>11/5/2010 | 60                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

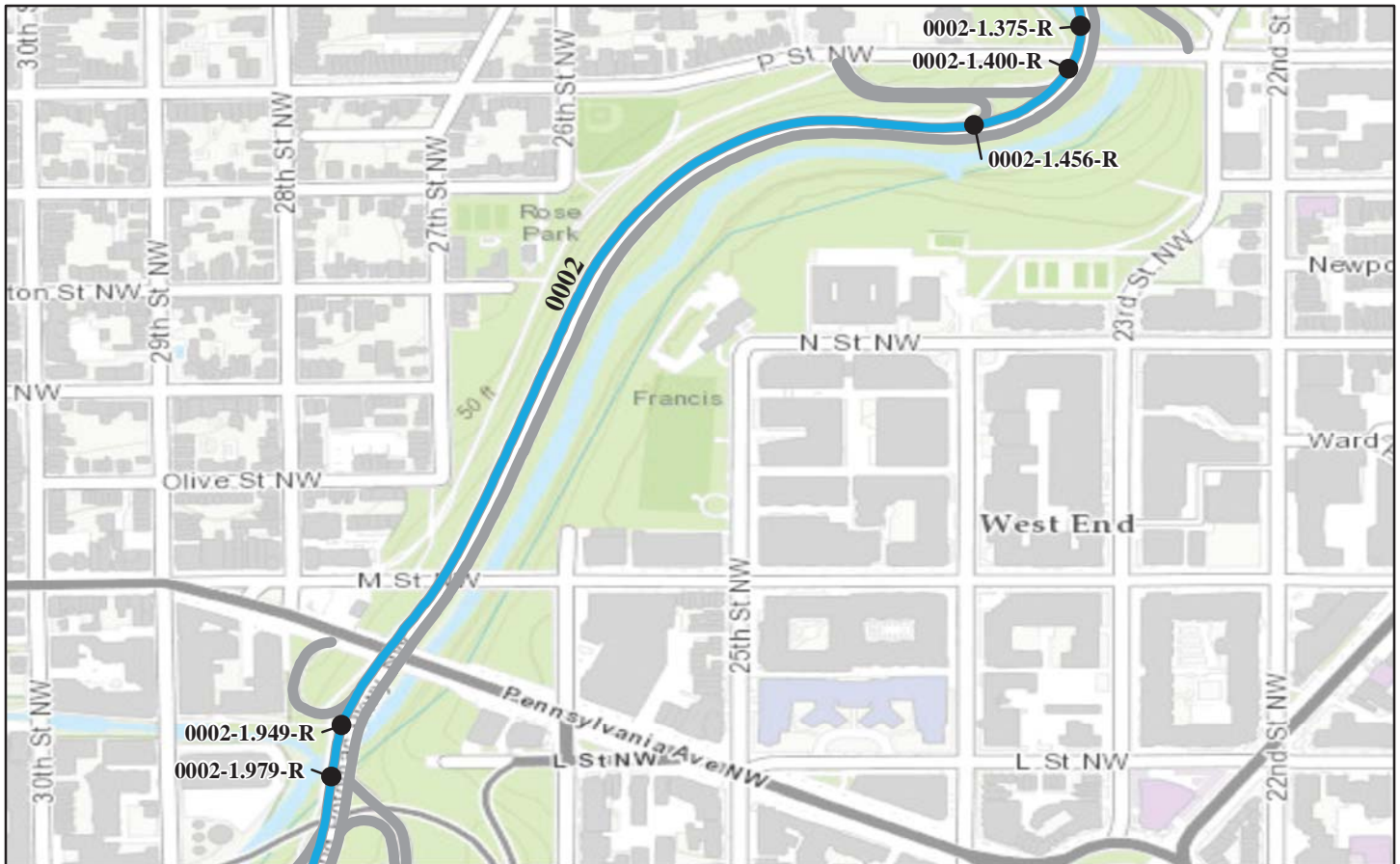


Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment   |      | *Repair<br>Cost |
|--|-------------------------|--|-------------------------|------|-----------------|
|  |                         |  | Begin                   | End  |                 |
| ROCR-0002-0.287-R<br>11/5/2010   | 62                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                    | NONE | \$0.00          |
| ROCR-0002-0.318-R<br>11/5/2010   | 62                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                    | NONE | \$0.00          |
| ROCR-0002-0.596-R<br>11/5/2010   | 661                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS          | OTHER: TIMBER<br>FLARED | NONE | \$6,078.00      |
| ROCR-0002-1.246-R<br>11/5/2010   | 269                     | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                    | NONE | \$11,798.00     |
| ROCR-0002-1.303-R<br>11/5/2010   | 234                     | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                    | NONE | \$10,874.00     |
| *2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only. |                         |  |                         |      |                 |

# Rock Creek Park

## ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND



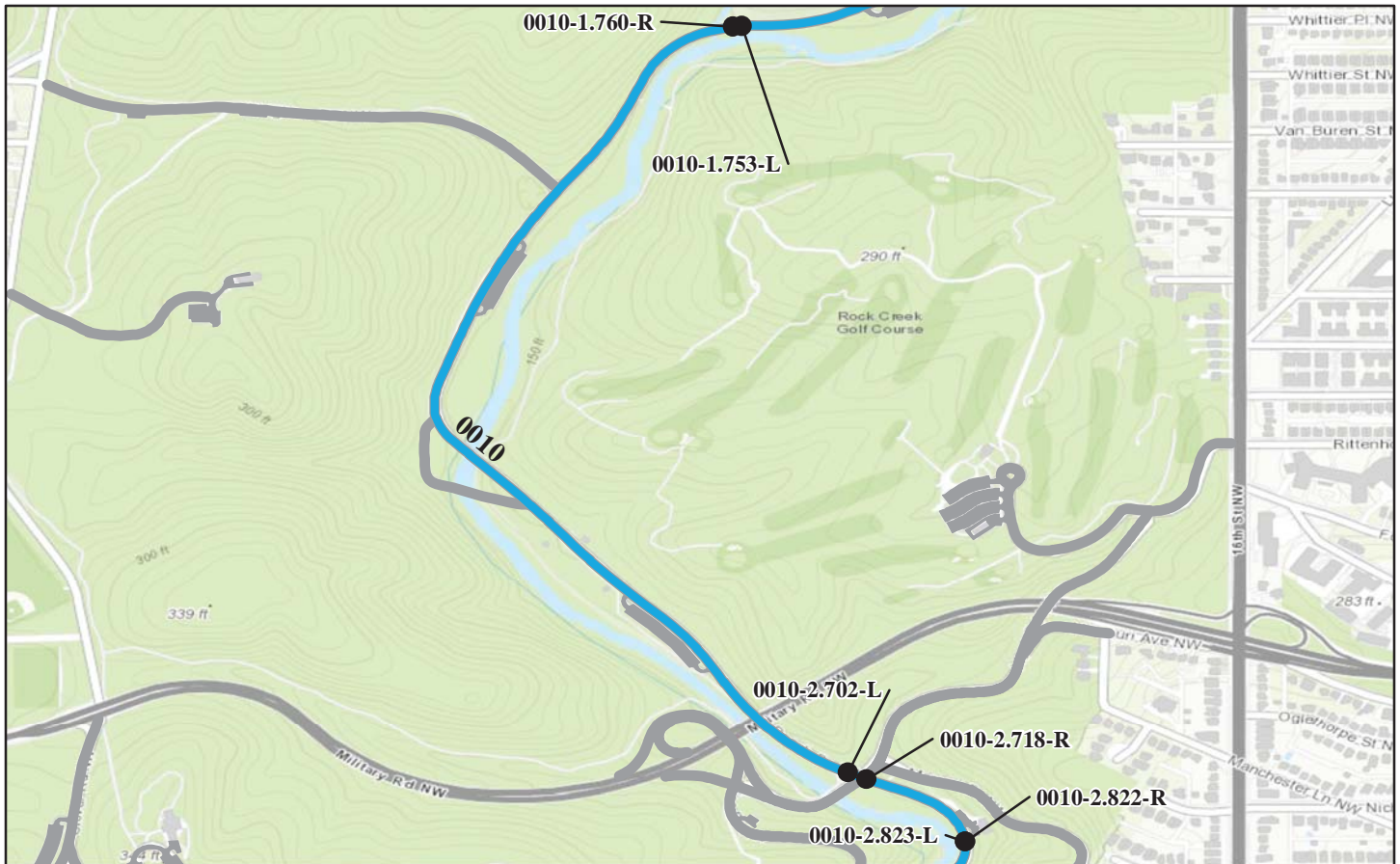
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0002-1.375-R<br>11/5/2010 | 43                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0002-1.400-R<br>11/5/2010 | 90                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | SBT/LOG FLARED        | NONE | \$0.00          |
| ROCR-0002-1.456-R<br>11/5/2010 | 2534                    | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | SBT/LOG FLARED        | NONE | \$3,548.00      |
| ROCR-0002-1.949-R<br>11/5/2010 | 77                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | SBT/LOG FLARED        | NONE | \$0.00          |
| ROCR-0002-1.979-R<br>11/5/2010 | 181                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | NONE                  | NONE | \$0.00          |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0010: BEACH DRIVE NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                |                         |  | Begin                 | End            |                 |
| ROCR-0010-1.753-L<br>11/8/2010 | 250                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | SBT/LOG FLARED        | SBT/LOG FLARED | \$2,282.00      |
| ROCR-0010-1.760-R<br>11/8/2010 | 115                     | STEEL-BACKED<br>TIMBER WITH<br>BLOCKOUT        | SBT/LOG BURIED        | SBT/LOG FLARED | \$2,338.00      |
| ROCR-0010-2.702-L<br>11/6/2010 | 17                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE           | \$0.00          |
| ROCR-0010-2.718-R<br>11/6/2010 | 19                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE           | \$0.00          |
| ROCR-0010-2.822-R<br>11/6/2010 | 18                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE           | \$1,788.00      |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0010: BEACH DRIVE NORTHWEST



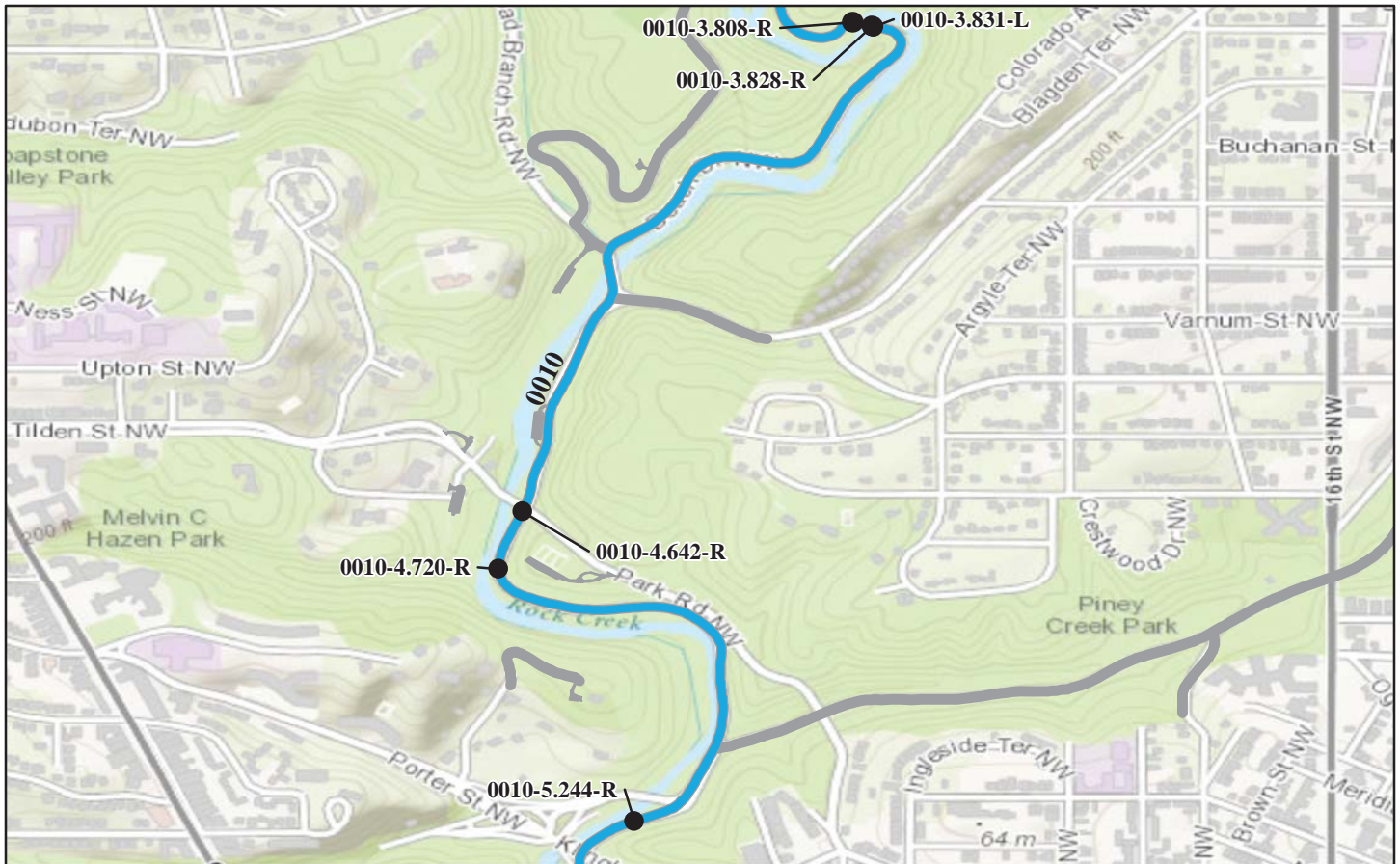
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0010-2.823-L<br>11/6/2010 | 16                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$1,788.00      |
| ROCR-0010-2.911-L<br>11/6/2010 | 10                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0010-3.231-L<br>11/8/2010 | 13                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$2,546.00      |
| ROCR-0010-3.808-R<br>11/8/2010 | 33                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0010-3.810-L<br>11/8/2010 | 28                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0010: BEACH DRIVE NORTHWEST



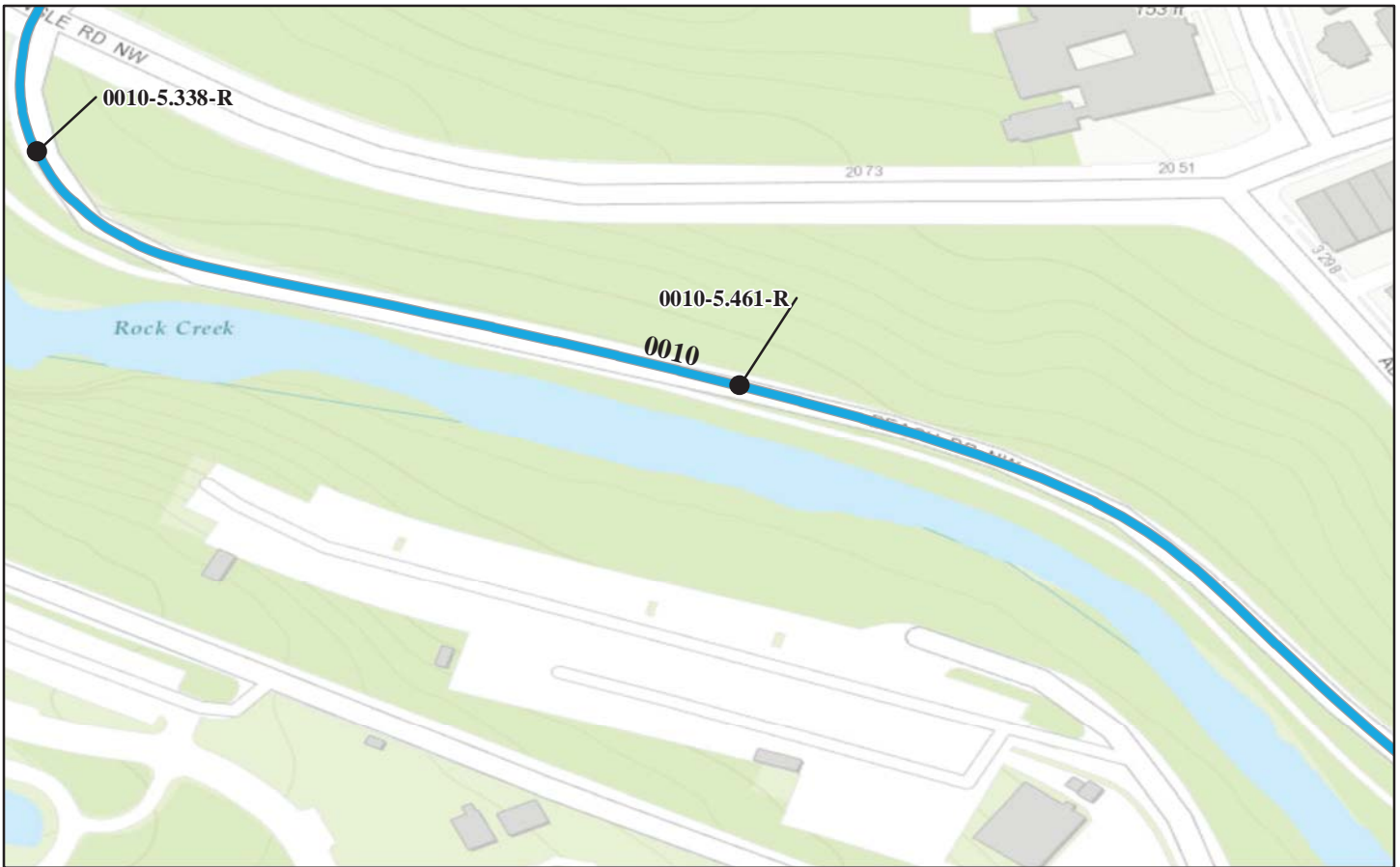
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| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0010-3.828-R<br>11/8/2010 | 26                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0010-3.831-L<br>11/8/2010 | 26                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0010-4.642-R<br>11/9/2010 | 28                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0010-4.720-R<br>11/8/2010 | 87                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$1,914.00      |
| ROCR-0010-5.244-R<br>11/8/2010 | 298                     | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0010: BEACH DRIVE NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0010-5.338-R<br>11/8/2010 | 586                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | NONE                  | NONE | \$3,888.00      |
| ROCR-0010-5.461-R<br>11/8/2010 | 633                     | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

## ROUTE 0012: WISE ROAD NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                         | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|---|-----------------------|----------------|-----------------|
|                                |                         |   | Begin                 | End            |                 |
| ROCR-0012-0.384-R<br>11/3/2010 | 722                     | STEEL-BACKED<br>TIMBER WITH<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$1,952.00      |
|                                |                         |   |                       |                |                 |
|                                |                         |   |                       |                |                 |
|                                |                         |   |                       |                |                 |
|                                |                         |   |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0014: BINGHAM DRIVE NORTHWEST



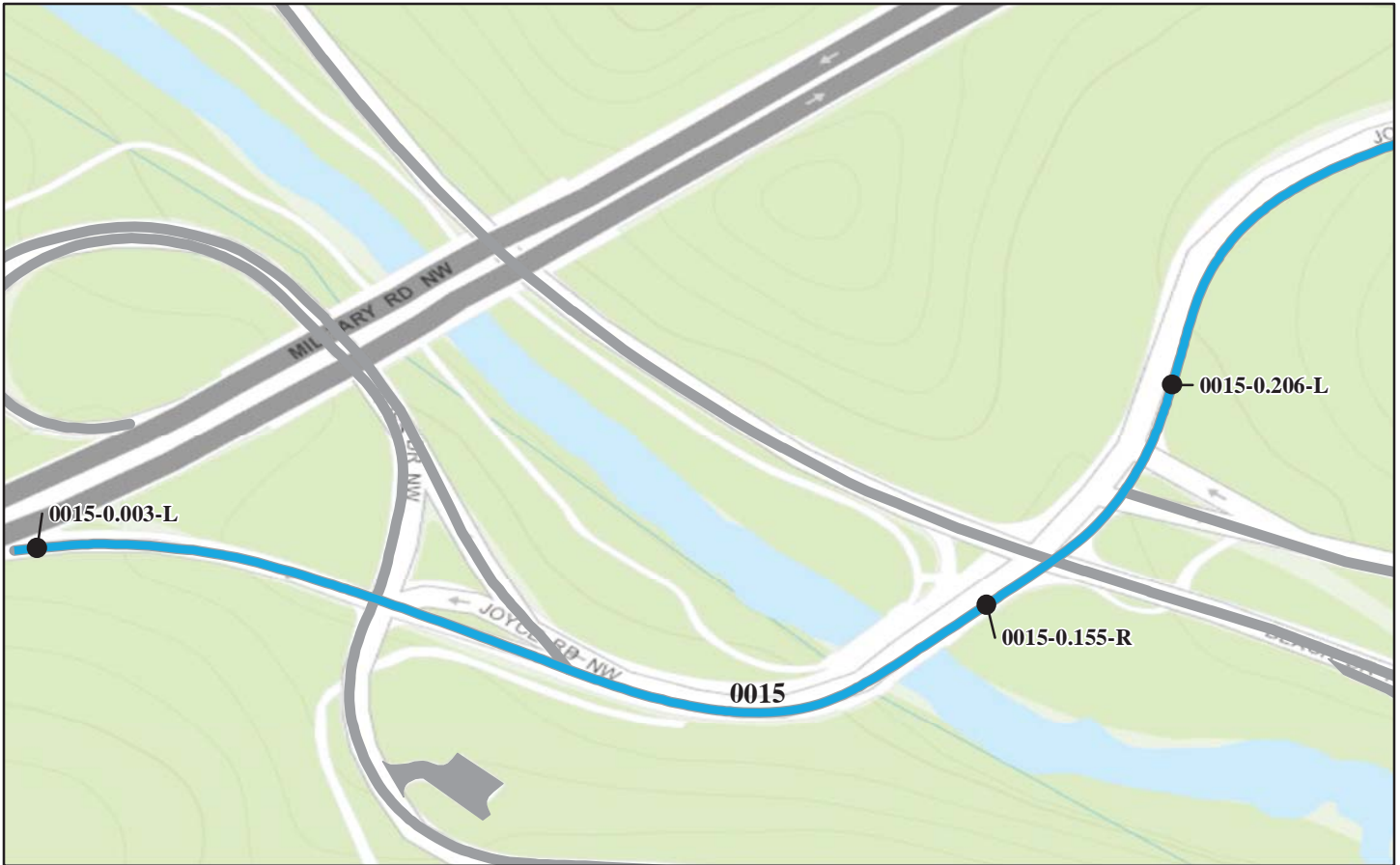
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0014-0.216-L<br>11/3/2010 | 25                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0015: JOYCE ROAD NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0015-0.003-L<br>11/6/2010 | 18                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0015-0.155-R<br>11/6/2010 | 25                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0015-0.206-L<br>11/6/2010 | 279                     | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$2,723.00      |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0016: ROSS DRIVE NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                |                         |  | Begin                 | End            |                 |
| ROCR-0016-0.272-L<br>11/3/2010 | 146                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$0.00          |
| ROCR-0016-0.406-R<br>11/3/2010 | 75                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | SBT/LOG BURIED | \$1,733.00      |
| ROCR-0016-0.462-L<br>11/3/2010 | 196                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG BURIED        | NONE           | \$0.00          |
| ROCR-0016-0.526-L<br>11/3/2010 | 144                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$0.00          |
| ROCR-0016-0.539-R<br>11/3/2010 | 30                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | NONE           | \$0.00          |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0016: ROSS DRIVE NORTHWEST



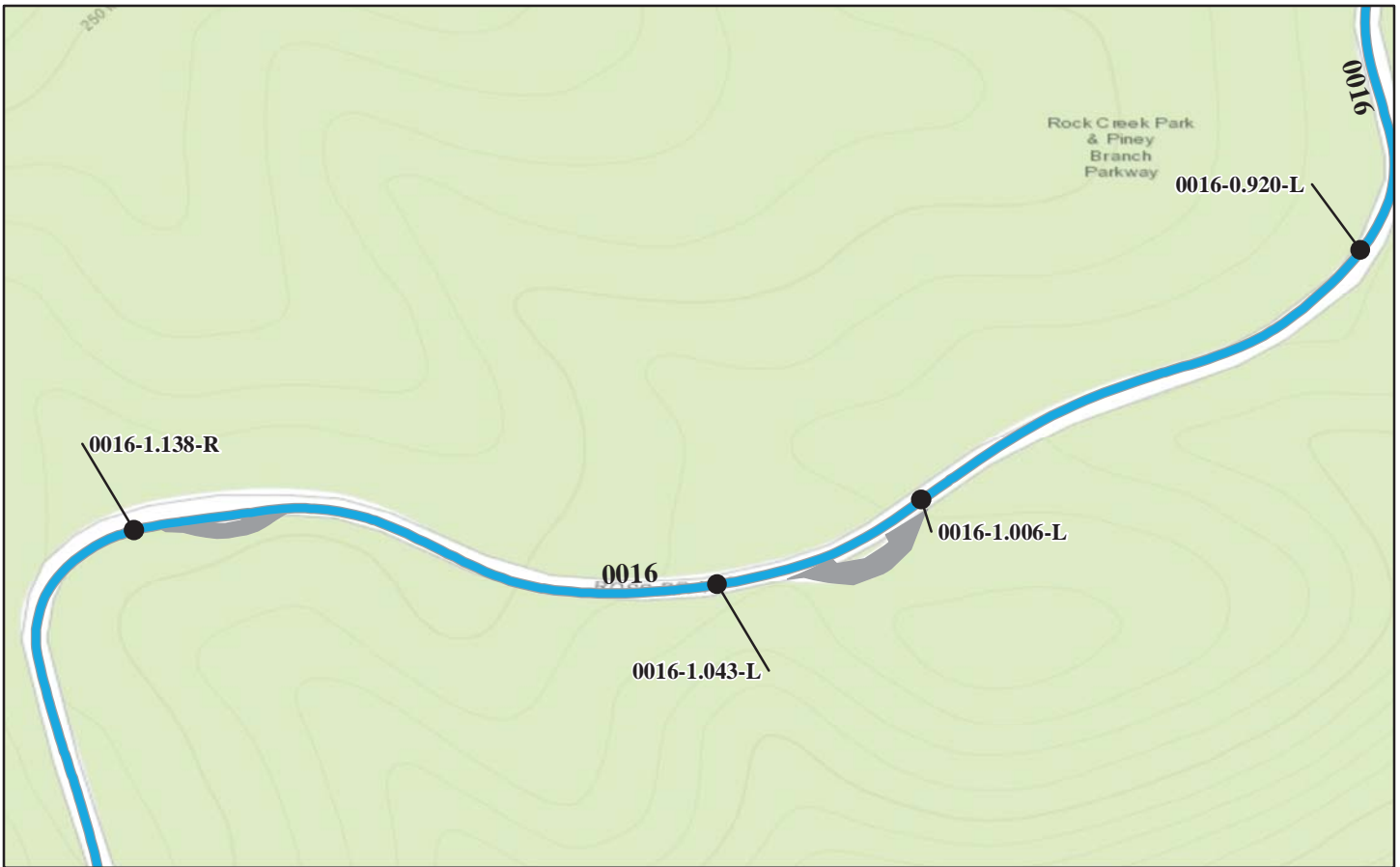
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                |                         |  | Begin                 | End            |                 |
| ROCR-0016-0.608-L<br>11/3/2010 | 36                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | NONE           | \$0.00          |
| ROCR-0016-0.815-L<br>11/3/2010 | 34                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | SBT/LOG FLARED | \$0.00          |
| ROCR-0016-0.815-R<br>11/3/2010 | 51                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | NONE           | \$1,952.00      |
| ROCR-0016-0.856-L<br>11/3/2010 | 274                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$0.00          |
| ROCR-0016-0.856-R<br>11/3/2010 | 170                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$3,163.00      |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0016: ROSS DRIVE NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                |                         |  | Begin                 | End            |                 |
| ROCR-0016-0.920-L<br>11/3/2010 | 126                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG BURIED        | SBT/LOG FLARED | \$1,952.00      |
| ROCR-0016-1.006-L<br>11/3/2010 | 180                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$0.00          |
| ROCR-0016-1.043-L<br>11/3/2010 | 115                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG BURIED        | NONE           | \$0.00          |
| ROCR-0016-1.138-R<br>11/3/2010 | 409                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$0.00          |
|                                |                         |  |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0017: MORROW DRIVE NORTHWEST

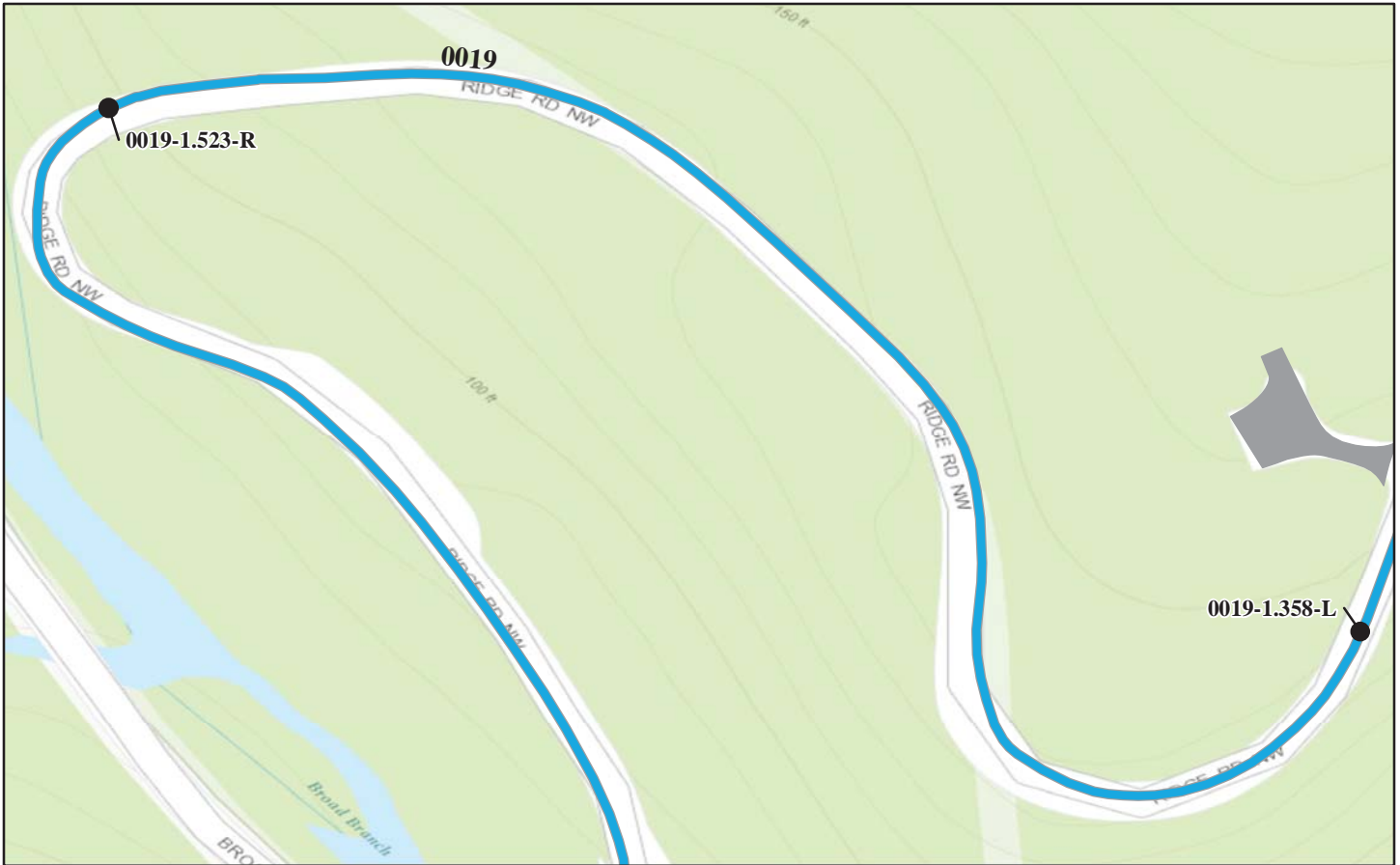


Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                       | Barrier End Treatment |      | *Repair<br>Cost |
|--|-------------------------|---------------------------------------|-----------------------|------|-----------------|
|  |                         |                                       | Begin                 | End  |                 |
| ROCR-0017-0.066-R<br>11/9/2010   | 490                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS | NONE                  | NONE | \$11,633.00     |
| ROCR-0017-0.210-R<br>11/8/2010   | 348                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS | NONE                  | NONE | \$12,491.00     |
| ROCR-0017-0.388-R<br>11/9/2010   | 181                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS | NONE                  | NONE | \$2,393.00      |
|  |                         |                                       |                       |      |                 |
|  |                         |                                       |                       |      |                 |
| *2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only. |                         |                                       |                       |      |                 |

# Rock Creek Park

## ROUTE 0019: GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                       | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|---------------------------------------|-----------------------|------|-----------------|
|                                |                         |                                       | Begin                 | End  |                 |
| ROCR-0019-1.358-L<br>11/9/2010 | 294                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS | NONE                  | NONE | \$4,262.00      |
| ROCR-0019-1.523-R<br>11/9/2010 | 189                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS | NONE                  | NONE | \$6,848.00      |
|                                |                         |                                       |                       |      |                 |
|                                |                         |                                       |                       |      |                 |
|                                |                         |                                       |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

## ROUTE 0021: GRANT ROAD NORTHWEST

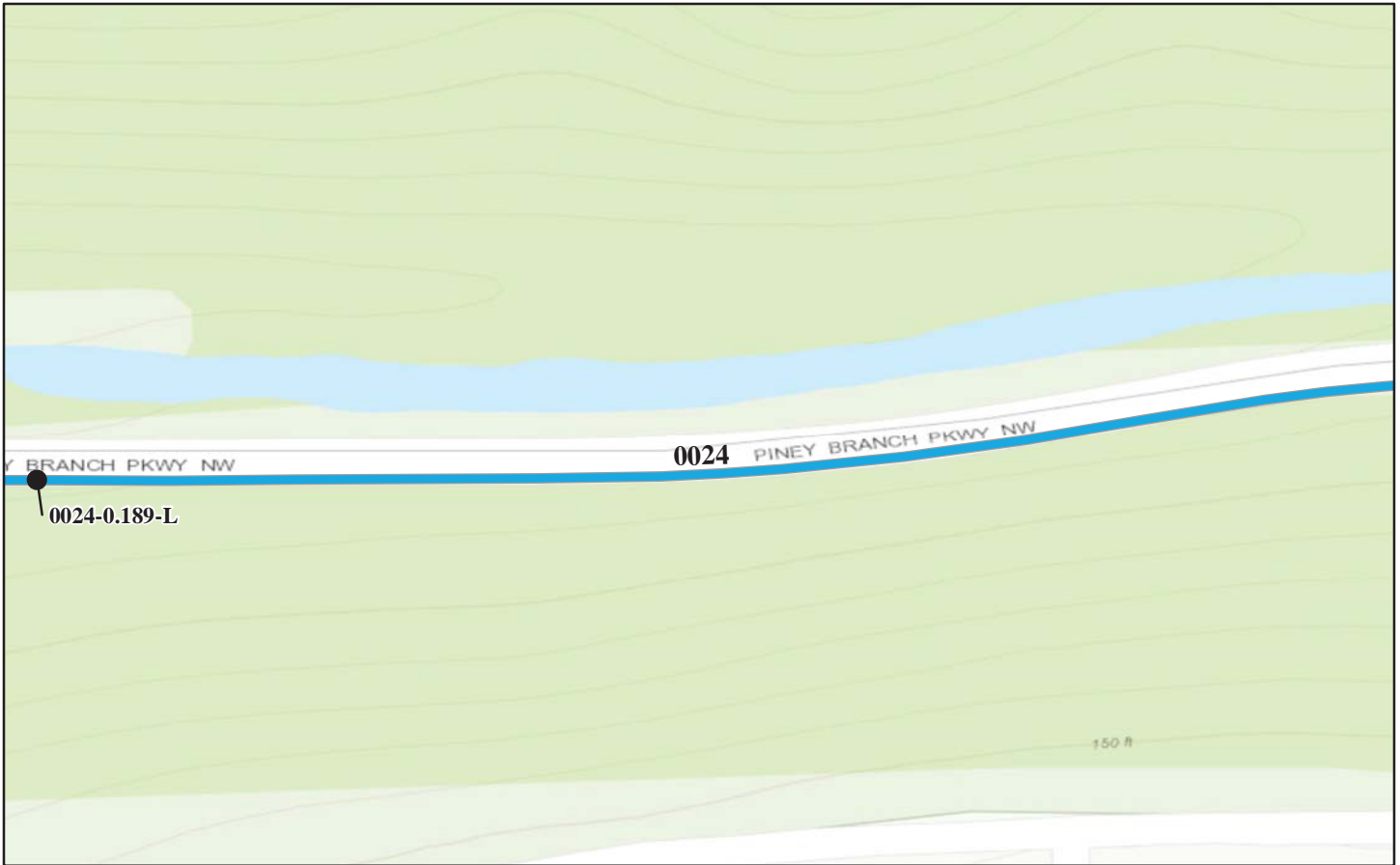


Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--|-------------------------|--|-----------------------|------|-----------------|
|  |                         |  | Begin                 | End  |                 |
| ROCR-0021-0.355-R<br>11/3/2010   | 56                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$1,788.00      |
| ROCR-0021-0.357-L<br>11/3/2010   | 50                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$3,658.00      |
|  |                         |  |                       |      |                 |
|  |                         |  |                       |      |                 |
|  |                         |  |                       |      |                 |
| *2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only. |                         |  |                       |      |                 |

# Rock Creek Park

## ROUTE 0024: PINEY BRANCH PARKWAY NORTHWEST



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                |                         |  | Begin                 | End  |                 |
| ROCR-0024-0.189-L<br>11/9/2010 | 1,078                   | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$618,343.00    |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |
|                                |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0026: CATHEDRAL AVENUE NORTHWEST



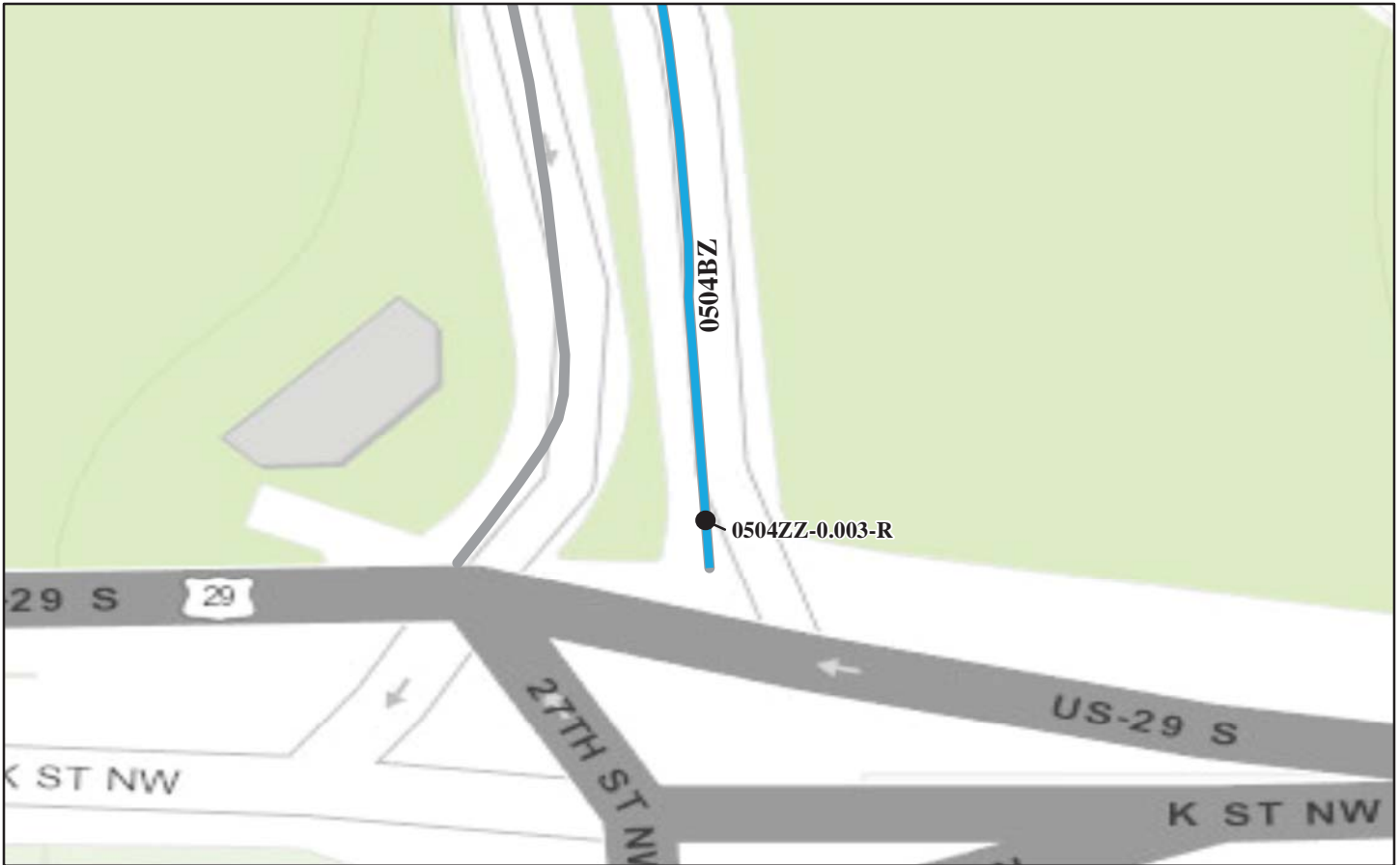
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date      | Barrier Length<br>(Ft.) | Barrier<br>Type    | Barrier End Treatment |      | *Repair<br>Cost |
|------------------------------------|-------------------------|--------------------|-----------------------|------|-----------------|
|                                    |                         |                    | Begin                 | End  |                 |
| ROCR-0026-0.004-L<br><br>11/9/2010 | 283                     | W-BEAM STRONG POST | NONE                  | NONE | \$0.00          |
|                                    |                         |                    |                       |      |                 |
|                                    |                         |                    |                       |      |                 |
|                                    |                         |                    |                       |      |                 |
|                                    |                         |                    |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0504ZZ: RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET



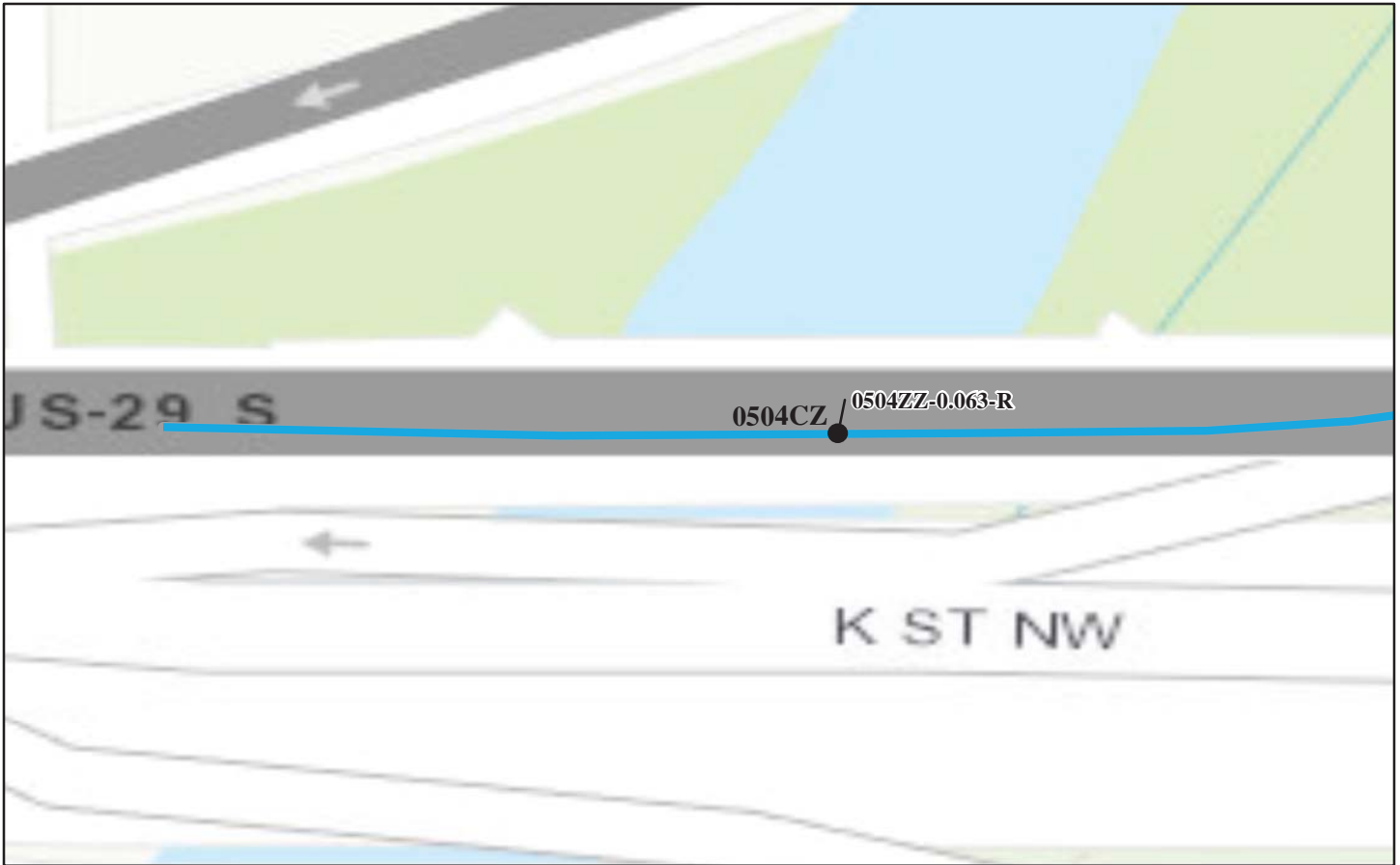
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|----------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                  |                         |  | Begin                 | End            |                 |
| ROCR-0504ZZ-0.003-R<br>11/5/2010 | 56                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | SBT/LOG FLARED | \$0.00          |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0504ZZ: RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET



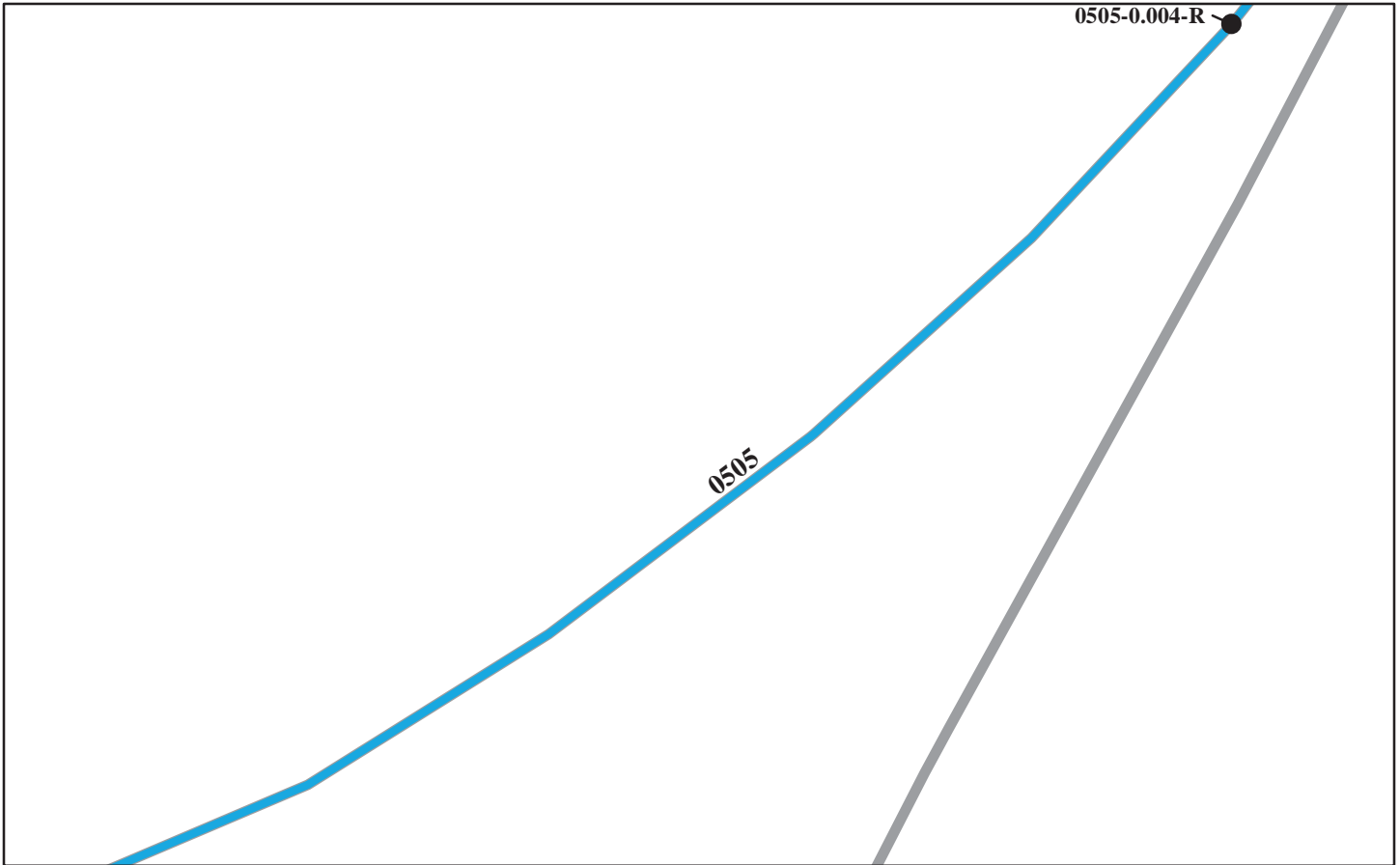
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |      | *Repair<br>Cost |
|----------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                  |                         |  | Begin                 | End  |                 |
| ROCR-0504ZZ-0.063-R<br>11/5/2010 | 41                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | NONE | \$0.00          |
|                                  |                         |  |                       |      |                 |
|                                  |                         |  |                       |      |                 |
|                                  |                         |  |                       |      |                 |
|                                  |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0505: RAMP FROM S/B ROCK CREEK PARKWAY TO PENNSYLVANIA AVENUE



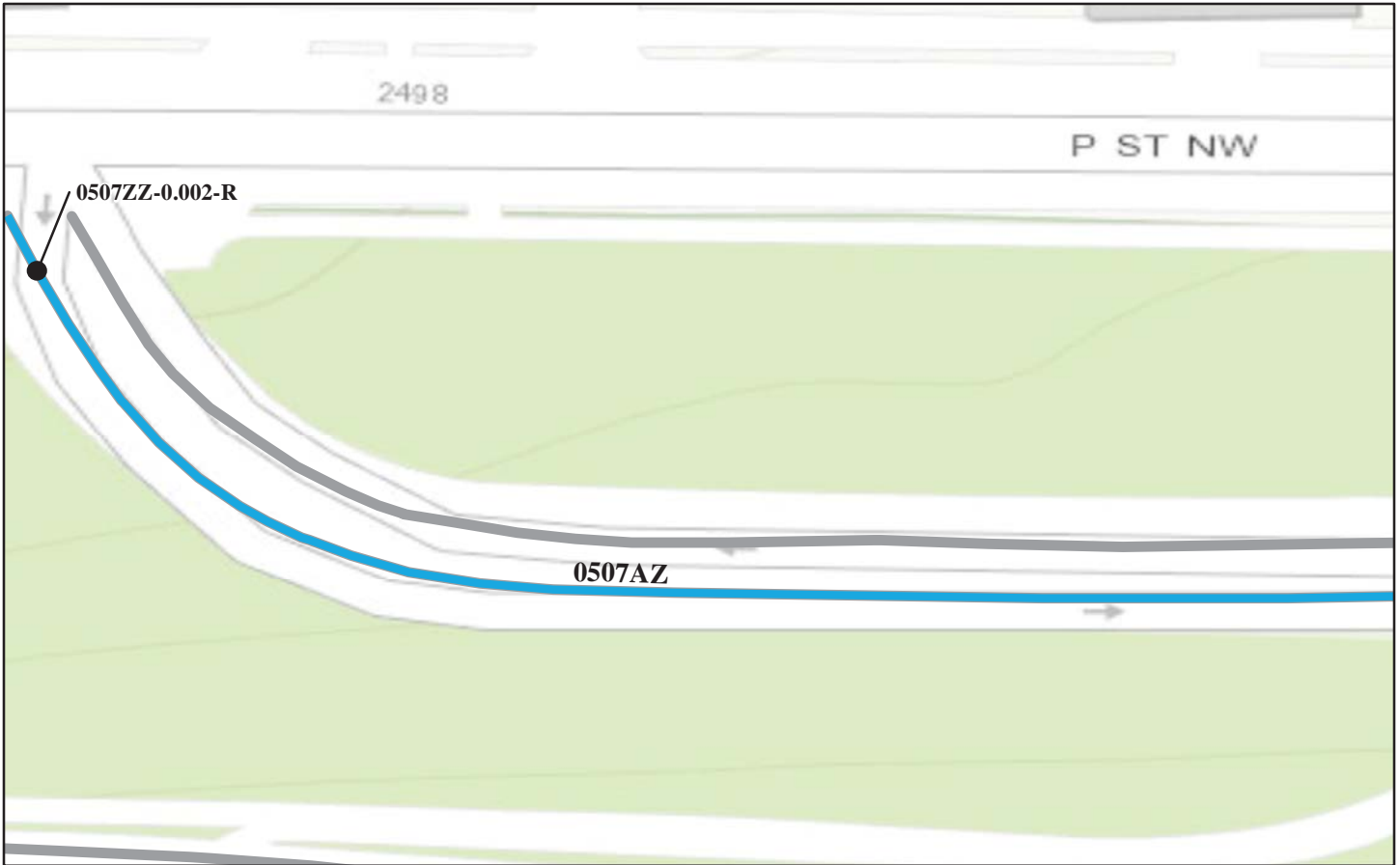
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date  | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|--------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                |                         |  | Begin                 | End            |                 |
| ROCR-0505-0.004-R<br>11/5/2010 | 58                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | SBT/LOG FLARED | \$0.00          |
|                                |                         |  |                       |                |                 |
|                                |                         |  |                       |                |                 |
|                                |                         |  |                       |                |                 |
|                                |                         |  |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0507ZZ: RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|----------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                  |                         |  | Begin                 | End            |                 |
| ROCR-0507ZZ-0.002-R<br>11/8/2010 | 328                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | SBT/LOG FLARED        | SBT/LOG FLARED | \$0.00          |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                                | Barrier End Treatment |      | *Repair<br>Cost |
|----------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                  |                         |  | Begin                 | End  |                 |
| ROCR-0509ZZ-0.006-R<br>11/8/2010 | 21                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT     | NONE                  | NONE | \$0.00          |
| ROCR-0509ZZ-0.012-R<br>11/8/2010 | 1227                    | W-BEAM STRONG POST                             | NONE                  | NONE | \$4,086.00      |
| ROCR-0509ZZ-0.276-L<br>11/8/2010 | 107                     | STEEL-BACKED<br>TIMBER WITH<br>BLOCKOUT        | SBT/LOG BURIED        | NONE | \$2,502.00      |
| ROCR-0509ZZ-0.286-R<br>11/8/2010 | 31                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |
| ROCR-0509ZZ-0.308-R<br>11/8/2010 | 20                      | STONE MASONRY<br>WITHOUT CONCRETE<br>CORE WALL | NONE                  | NONE | \$0.00          |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

## ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B



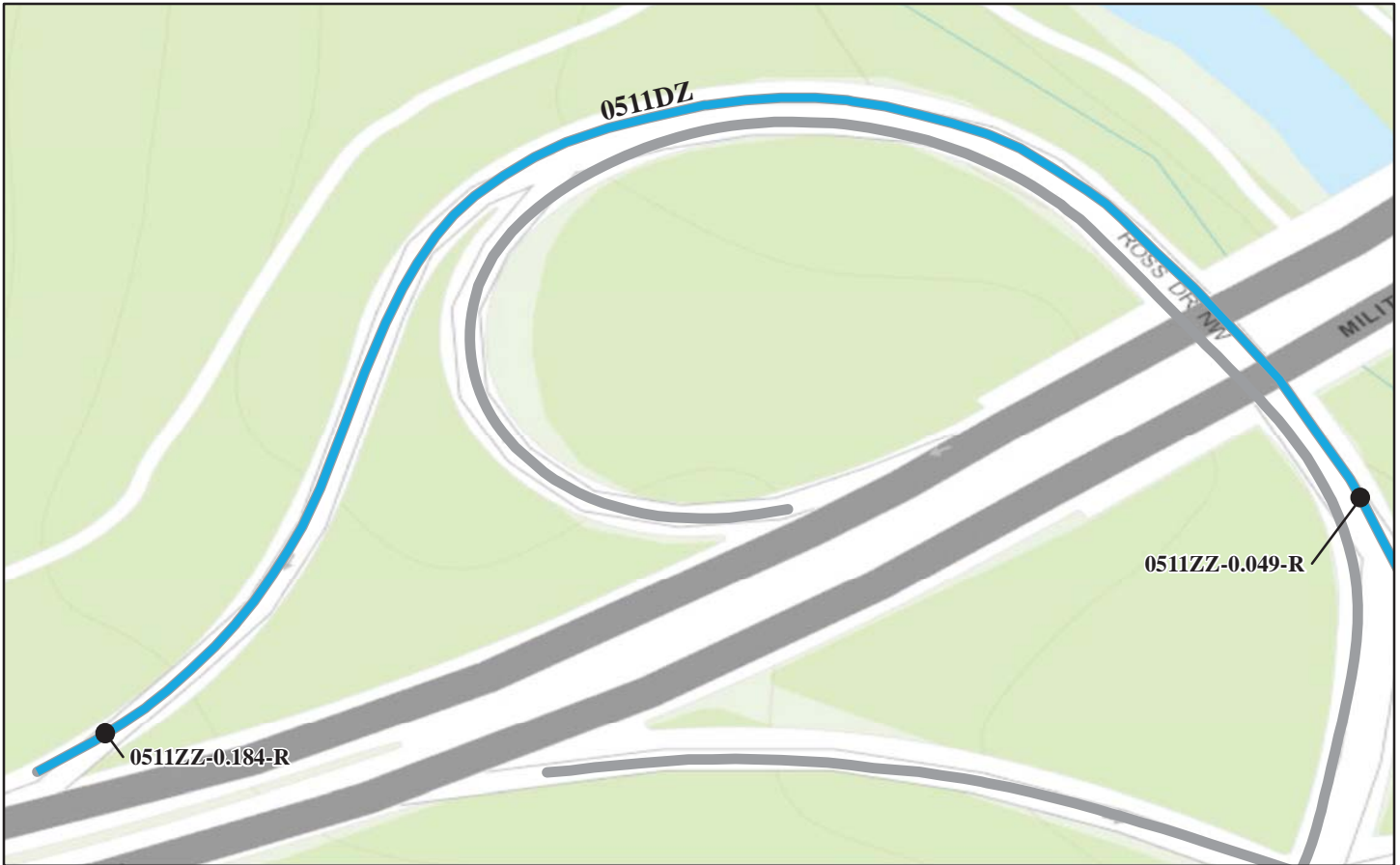
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                         | Barrier End Treatment |                | *Repair<br>Cost |
|----------------------------------|-------------------------|---|-----------------------|----------------|-----------------|
|                                  |                         |   | Begin                 | End            |                 |
| ROCR-0509ZZ-0.311-R<br>11/8/2010 | 245                     | STEEL-BACKED<br>TIMBER WITH<br>BLOCKOUT | NONE                  | SBT/LOG FLARED | \$0.00          |
|                                  |                         |   |                       |                |                 |
|                                  |                         |   |                       |                |                 |
|                                  |                         |   |                       |                |                 |
|                                  |                         |   |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

**ROUTE 0511ZZ: RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE ROAD NW TO MILITARY ROAD NW**



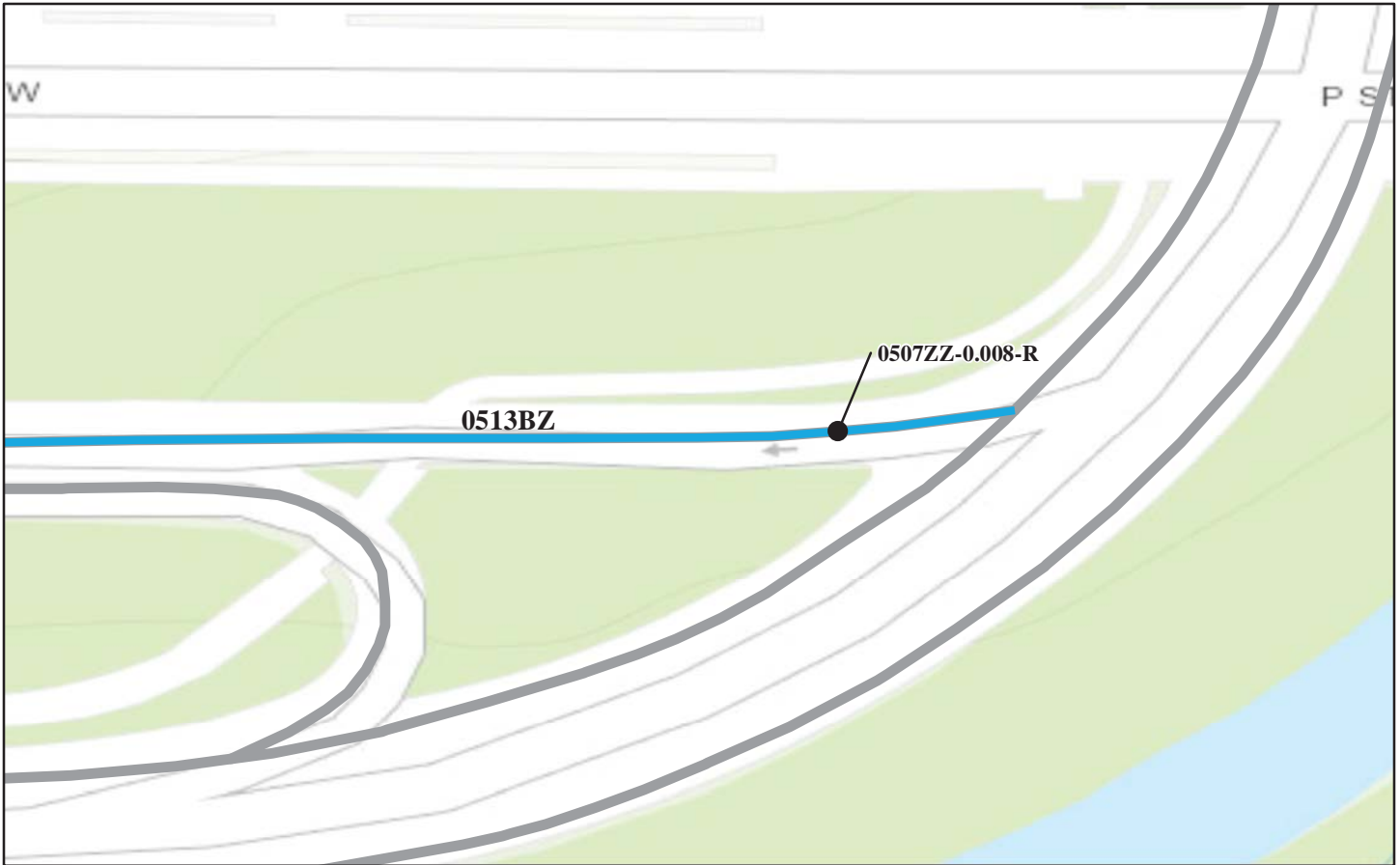
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                       | Barrier End Treatment           |      | *Repair<br>Cost |
|----------------------------------|-------------------------|---------------------------------------|---------------------------------|------|-----------------|
|                                  |                         |                                       | Begin                           | End  |                 |
| ROCR-0511ZZ-0.049-R<br>11/8/2010 | 269                     | OTHER: TIMBER RAIL<br>ON TIMBER POSTS | OTHER: TIMBER<br>FLARED         | NONE | \$2,612.00      |
| ROCR-0511ZZ-0.184-R<br>11/8/2010 | 29                      | W-BEAM STRONG POST                    | W-BEAM TANGENT<br>350 COMPLIANT | NONE | \$1,942.00      |
|                                  |                         |                                       |                                 |      |                 |
|                                  |                         |                                       |                                 |      |                 |
|                                  |                         |                                       |                                 |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0507ZZ: RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET



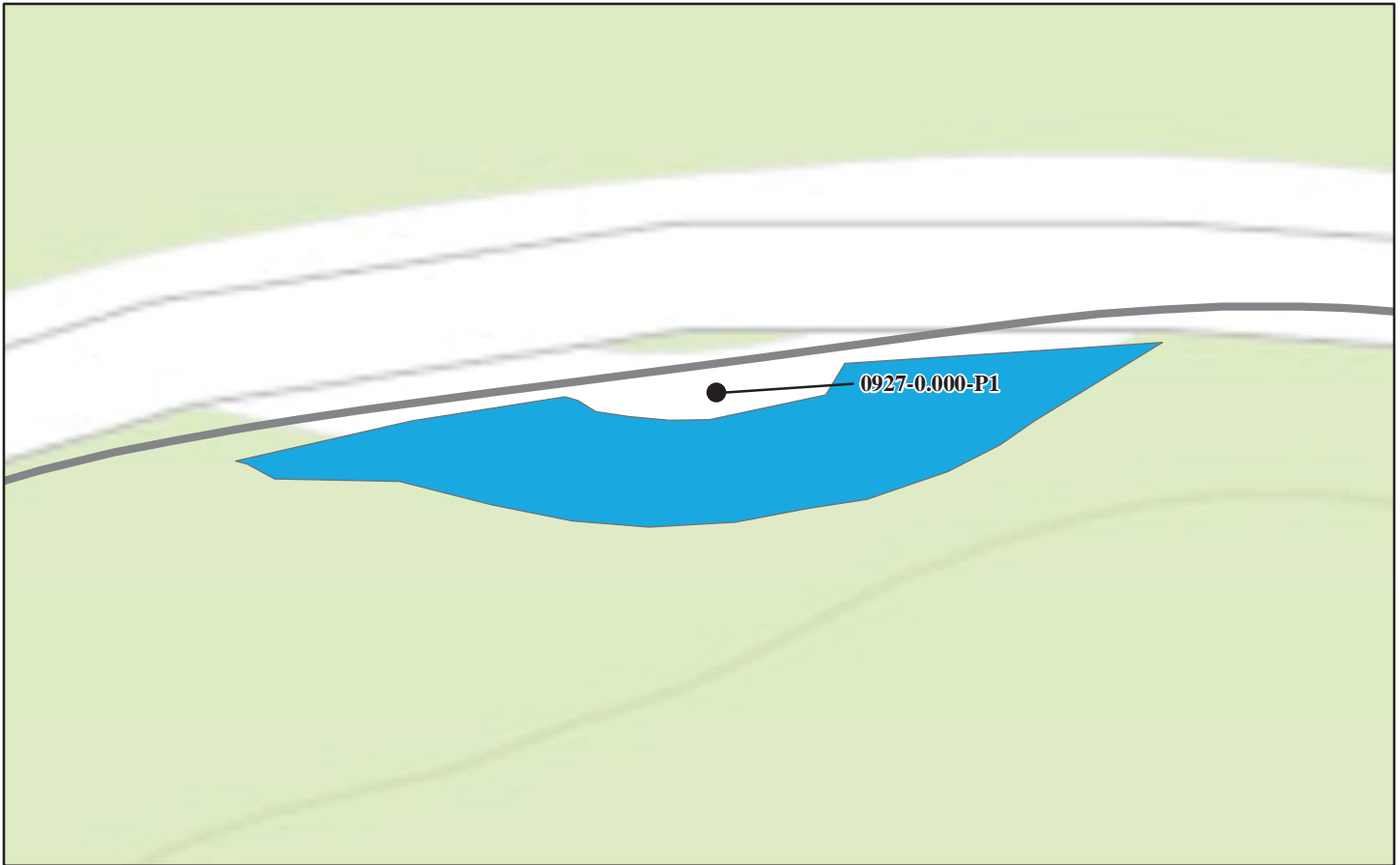
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date    | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |                | *Repair<br>Cost |
|----------------------------------|-------------------------|--|-----------------------|----------------|-----------------|
|                                  |                         |  | Begin                 | End            |                 |
| ROCR-0507ZZ-0.008-R<br>11/5/2010 | 110                     | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | SBT/LOG FLARED | \$1,898.00      |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |
|                                  |                         |  |                       |                |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0927: PICNIC GROVE #20 PARKING



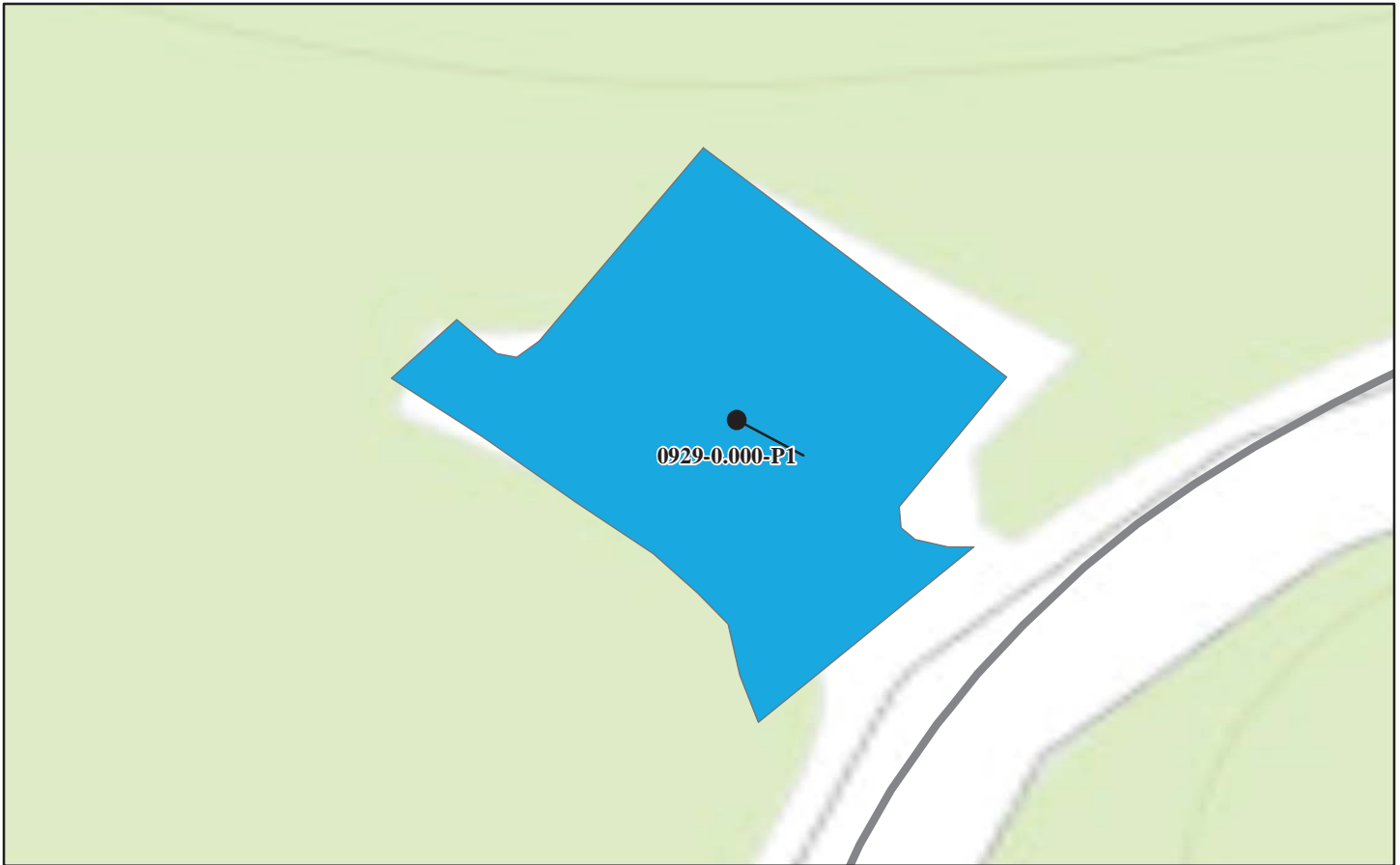
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date   | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |      | *Repair<br>Cost |
|---------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                 |                         |  | Begin                 | End  |                 |
| ROCR-0927-0.000-P1<br>11/3/2010 | 15                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | NONE | \$0.00          |
|                                 |                         |  |                       |      |                 |
|                                 |                         |  |                       |      |                 |
|                                 |                         |  |                       |      |                 |
|                                 |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

## ROUTE 0929: PICNIC GROVE #21 PARKING



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

| Barrier ID<br>Inspection Date       | Barrier Length<br>(Ft.) | Barrier<br>Type                            | Barrier End Treatment |      | *Repair<br>Cost |
|-------------------------------------|-------------------------|--|-----------------------|------|-----------------|
|                                     |                         |  | Begin                 | End  |                 |
| ROCR-0929-0.000-P1<br><br>11/3/2010 | 17                      | STEEL-BACKED<br>TIMBER WITHOUT<br>BLOCKOUT | NONE                  | NONE | \$0.00          |
|                                     |                         |  |                       |      |                 |
|                                     |                         |  |                       |      |                 |
|                                     |                         |  |                       |      |                 |
|                                     |                         |  |                       |      |                 |

\*2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Tier 3 Barrier Details



Rock Creek Park



**Federal Lands Highway  
Road Inventory Program**

|                                |   |   |                 |                                  |       |
|--------------------------------|---|---|-----------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0001-0.183-R                         |   |                 |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |   |                 |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>  | 30.00           |                                  |       |
| <b>Barrier Description</b>     |   |   |                 |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT      | <b>Barrier Function:</b>  | TRAFFIC         |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                   | <b>Post Material:</b>   | WOOD            |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>  | 85              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW                                       |   |                 |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |                 |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>  | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |       |
| <b>Average Measurements</b>    |   |   |                 |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0             | <b>Post Spacing (In.):</b>       | 120.0 |
| <b>Height (In.):</b>           | 28.0                                      | <b>Lateral Offset (In.):</b>  | 39.2            | <b>Road Grade (%):</b>           | 0.20  |
| <b>Physical Condition</b>      |   |   |                 |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection was observed. Height is 0.5 - 2 in above 27-in design height. |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | 2 rails have been impacted and have breaks resulting in cross-section deformation.    |                 |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements were observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering was observed.  |                 |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |   |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>             |   |                 |                                  |       |
|                                | <b>Missing Elements:</b>                  |   |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          |   |                 |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-0.183-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 30.00 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2172 |
| <b>Brief Workorder:</b> | Replace 20 feet of rail.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace Rail at \$25- per -Lin. Ft. for 20 LF = \$500. Replace 20 feet of rail.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_0.183\_R\_1.jpg

|                                |   |  |         |                                  |       |
|--------------------------------|---|--|---------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0001-0.251-R                         |  |         |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |  |         |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 37.00   |                                  |       |
| <b>Barrier Description</b>     |   |  |         |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT      | <b>Barrier Function:</b>   | TRAFFIC |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                   | <b>Post Material:</b>  | WOOD    |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 388     |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |       |
| <b>Hazard Behind Barrier:</b>  | HIGH                                      |  |         |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                            | <b>Ending End Trtmt Crashworthy?:</b>  | NO      |                                  |       |
| <b>Average Measurements</b>    |   |  |         |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0     | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 27.7                                      | <b>Lateral Offset (In.):</b>   | 23.0    | <b>Road Grade (%):</b>           | 0.20  |
| <b>Physical Condition</b>      |   |  |         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height ranges from 1 in below to 3 in above the 27-in design height. |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |         |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                               |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |         |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |         |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-0.251-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 37.00 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_0.251\_R\_1.jpg

|                                |   |  |                  |                                  |      |
|--------------------------------|---|--|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0001-0.779-R                         |  |                  |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |  |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 42.70            |                                  |      |
| <b>Barrier Description</b>     |   |  |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>   | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>  | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 19               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                      |  |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |      |
| <b>Average Measurements</b>    |   |  |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>  | 24.2             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 26.0                                      | <b>Lateral Offset (In.):</b>   | 112.6            | <b>Road Grade (%):</b>           | 0.20 |
| <b>Physical Condition</b>      |   |  |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height is 1 to 3 in above 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |  |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  |  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |  |                  |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-0.779-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 42.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_0.779\_R\_1.jpg

|                                |   |  |                  |                                  |      |
|--------------------------------|---|--|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0001-0.804-R                         |  |                  |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |  |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 42.70            |                                  |      |
| <b>Barrier Description</b>     |   |  |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>   | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>  | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 48               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                      |  |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |      |
| <b>Average Measurements</b>    |   |  |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>  | 25.0             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 29.0                                      | <b>Lateral Offset (In.):</b>   | 90.0             | <b>Road Grade (%):</b>           | 0.30 |
| <b>Physical Condition</b>      |   |  |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height is 4 to 6 in above 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |  |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  |  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |  |                  |                                  |      |



|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-0.804-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 42.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_0.804\_R\_1.jpg

|                                |   |   |                  |                                  |       |
|--------------------------------|---|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0001-1.342-L                         |   |                  |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>  | 74.50            |                                  |       |
| <b>Barrier Description</b>     |   |   |                  |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS     | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                           | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>  | 930              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | EXTREME                                   |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |       |
| <b>Average Measurements</b>    |   |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 119.5 |
| <b>Height (In.):</b>           | 22.3                                      | <b>Lateral Offset (In.):</b>  | 31.6             | <b>Road Grade (%):</b>           | 0.70  |
| <b>Physical Condition</b>      |   |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | 500 ft of barrier deflects more than 12 in. Height is 3 - 6 in below the 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>                  | 11 bolts are missing along the barrier length.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | 29 rails and 23 posts are rotten and unstable.  |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |   |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>             |   |                  |                                  |       |
|                                | <b>Missing Elements:</b>                  |   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          |   |                  |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-1.342-L                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 74.50 |

### Repair Recommendations

|                         |   |                        |                     |                     |         |
|-------------------------|---|------------------------|---------------------|---------------------|---------|
| <b>Repair Action:</b>   | REPLACE   | <b>FMSS Work Type:</b> | CAPITAL IMPROVEMENT | <b>Repair Cost:</b> | \$91630 |
| <b>Brief Workorder:</b> | Remove existing guardrail and replace with new steel-backed timber with flared end treatments.  |                        |                     |                     |         |
| <b>Workorder:</b>       | Remove Guardrail at \$10- per -Lin. Ft. for 930 LF = \$9300.<br>Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 870 LF = \$52200.<br>SBT / Log Flared at \$5000- per -Each for 2 Unit(s) = \$10000.<br>Low Speed Traffic Control at \$1475- per -Day for 8 Day(s) = \$11800. 4 days removal 4 days installation |                        |                     |                     |         |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_1.342\_L\_1.jpg

|                                |   |   |                  |                                  |      |
|--------------------------------|---|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0001-1.832-R                         |   |                  |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>  | 38.50            |                                  |      |
| <b>Barrier Description</b>     |   |   |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>   | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>  | 41               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                       |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |   |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |   |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>   | 22.0             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 31.0                                      | <b>Lateral Offset (In.):</b>  | 88.0             | <b>Road Grade (%):</b>           | 1.20 |
| <b>Physical Condition</b>      |   |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection was observed. Height is 5 - 8 in above 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking was observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements were observed.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering was observed.  |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |   |                  |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-1.832-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 38.50 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_1.832\_R\_1.jpg



|                                |   |   |                  |                                  |      |
|--------------------------------|---|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0001-1.857-R                         |   |                  |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>  | 41.00            |                                  |      |
| <b>Barrier Description</b>     |   |   |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>   | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>  | 60               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                    |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |   |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |   |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>   | 22.0             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 31.2                                      | <b>Lateral Offset (In.):</b>  | 74.3             | <b>Road Grade (%):</b>           | 1.40 |
| <b>Physical Condition</b>      |   |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection was observed. Height is 6 - 8 in above 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking was observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements were observed.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering was observed.  |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                  |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |   |                  |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0001-1.857-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 41.00 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0001: ROCK CREEK AND POTOMAC PARKWAY NORTHBOUND

## Barrier Condition Photos



ROCR\_0001\_1.857\_R\_1.jpg

|                                |   |   |                 |                                  |      |
|--------------------------------|---|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0002-0.287-R                         |   |                 |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>  | 32.70           |                                  |      |
| <b>Barrier Description</b>     |   |   |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>   | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>  | 62              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                       |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |   |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>  | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |   |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>   | 21.7            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 33.0                                      | <b>Lateral Offset (In.):</b>  | 72.6            | <b>Road Grade (%):</b>           | 1.30 |
| <b>Physical Condition</b>      |   |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height is 8 to 10 in above the 24-in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |   |                 |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-0.287-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 32.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_0.287\_R\_1.jpg

|                                |   |  |                 |                                  |      |
|--------------------------------|---|--|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0002-0.318-R                         |  |                 |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 32.70           |                                  |      |
| <b>Barrier Description</b>     |   |  |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>   | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>  | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 62              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                       |  |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A             |                                  |      |
| <b>Average Measurements</b>    |   |  |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>  | 21.7            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 30.7                                      | <b>Lateral Offset (In.):</b>   | 76.6            | <b>Road Grade (%):</b>           | 1.00 |
| <b>Physical Condition</b>      |   |  |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height is 3 to 9 in above the 24-in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |  |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  |  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |  |                 |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-0.318-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 32.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_0.318\_R\_1.jpg

|                                |   |  |                  |                                  |       |
|--------------------------------|---|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0002-0.596-R                         |  |                  |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 51.20            |                                  |       |
| <b>Barrier Description</b>     |   |  |                  |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS     | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                           | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 661              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                    |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | OTHER: TIMBER<br>FLARED                   | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |       |
| <b>Average Measurements</b>    |   |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 125.6 |
| <b>Height (In.):</b>           | 26.0                                      | <b>Lateral Offset (In.):</b>   | 28.0             | <b>Road Grade (%):</b>           | 0.30  |
| <b>Physical Condition</b>      |   |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | 70 ft of barrier is 1 - 2 in below 27-in design height. 20 ft is out of alignment by 6 - 12 in and 20 ft is out of alignment by 12+ in.                      |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | 6 rails have cracks due to impact that have deformed the cross section.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements were observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | 2 posts and 4 rails have voids of 3 in or more due to rotting wood. Rotting is concentrated at the bolted connections and connections are loose as a result. |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              | Alignment is acceptable. Height is within 1-in. of 27-in. design height.   |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking was observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements were observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | First rail is decayed due to weathering.   |                  |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-0.596-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 51.20 |

### Repair Recommendations

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$6078 |
| <b>Brief Workorder:</b> | Raise 110 feet of guardrail to 27-inch design height and replace 110 feet of rail and 2 posts.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 110 LF = \$1100. Raise 70LF to 27-inch design height and adjust alignment of 40 feet.<br>Replace Rail at \$25- per -Lin. Ft. for 110 LF = \$2750. Replace 11 broken/rotten rails<br>Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 rotten posts<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_0.596\_R\_1.jpg

|                                |   |  |         |                                  |      |
|--------------------------------|---|--|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0002-1.246-R                         |  |         |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |         |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 42.70   |                                  |      |
| <b>Barrier Description</b>     |   |  |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>   | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>  | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 269     |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                      |  |         |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |      |
| <b>Average Measurements</b>    |   |  |         |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>  | 24.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 38.2                                      | <b>Lateral Offset (In.):</b>   | 20.0    | <b>Road Grade (%):</b>           | 0.20 |
| <b>Physical Condition</b>      |   |  |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height is 14 to 15 in above the 24-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |         |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | Mortar joints along the top 18 in of wall are deteriorated. Stones are not loose.      |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |  |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |  |         |                                  |      |
|                                | <b>Missing Elements:</b>                  |  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |  |         |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.246-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 42.70 |

**Repair Recommendations**

|                         |  |                        |                      |                     |         |
|-------------------------|--|------------------------|----------------------|---------------------|---------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$11798 |
| <b>Brief Workorder:</b> | Re-point 269 feet of barrier.  |                        |                      |                     |         |
| <b>Workorder:</b>       | Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 45 SY = \$6300. (269 ft x 1.5 ft) / 9sf/sy = 45 sq yds<br>Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. |                        |                      |                     |         |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_1.246\_R\_1.jpg

|                                |   |  |         |                                  |      |
|--------------------------------|---|--|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0002-1.303-R                         |  |         |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |         |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 34.20   |                                  |      |
| <b>Barrier Description</b>     |   |  |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>   | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>  | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 234     |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                      |  |         |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |      |
| <b>Average Measurements</b>    |   |  |         |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>  | 25.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 29.2                                      | <b>Lateral Offset (In.):</b>   | 59.2    | <b>Road Grade (%):</b>           | 0.60 |
| <b>Physical Condition</b>      |   |  |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height is 5 to 6 in above the 24-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | 2 40-in cap stones have become displaced.  |         |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | Mortar joints along the top 18 in of wall are deteriorated. Stones are not loose.    |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |  |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |  |         |                                  |      |
|                                | <b>Missing Elements:</b>                  |  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |  |         |                                  |      |



|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.303-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 34.20 |

**Repair Recommendations**

|                         |  |                        |                      |                     |         |
|-------------------------|--|------------------------|----------------------|---------------------|---------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$10874 |
| <b>Brief Workorder:</b> | Re-point top 18 inches of stone barrier and replace 2 displaced cap stones.  |                        |                      |                     |         |
| <b>Workorder:</b>       | Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 39 SY = \$5460. (234 ft x 1.5 ft) / 9sf/sy = 39 sq yds<br>Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. |                        |                      |                     |         |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_1.303\_R\_1.jpg

|                                |   |  |                 |                                  |      |
|--------------------------------|---|--|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0002-1.375-R                         |  |                 |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 35.20           |                                  |      |
| <b>Barrier Description</b>     |   |  |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL  | <b>Barrier Function:</b>   | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                     | <b>Post Material:</b>  | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 43              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                    |  |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A             |                                  |      |
| <b>Average Measurements</b>    |   |  |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24  | <b>Width (In.):</b>  | 27.0            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 26.2                                      | <b>Lateral Offset (In.):</b>   | 94.0            | <b>Road Grade (%):</b>           | 1.40 |
| <b>Physical Condition</b>      |   |  |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height ranges from 1 in to 4 in above 24 in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |  |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             |  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  |  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          |  |                 |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.375-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 35.20 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_1.375\_R\_1.jpg

|                                |   |  |                 |                                  |      |
|--------------------------------|---|--|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0002-1.400-R                         |  |                 |                                  |      |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 32.70           |                                  |      |
| <b>Barrier Description</b>     |   |  |                 |                                  |      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT      | <b>Barrier Function:</b>   | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                   | <b>Post Material:</b>  | WOOD            |                                  |      |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 90              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                       |  |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |   |  |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES  |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                            | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A             |                                  |      |
| <b>Average Measurements</b>    |   |  |                 |                                  |      |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0             | <b>Post Spacing (In.):</b>       | 59.7 |
| <b>Height (In.):</b>           | 26.2                                      | <b>Lateral Offset (In.):</b>   | 19.0            | <b>Road Grade (%):</b>           | 1.70 |
| <b>Physical Condition</b>      |   |  |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height was within 1 in of the 27 in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              | Alignment is acceptable. Height is within 1-in. of 27-in. design height.             |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                 |                                  |      |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.400-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 32.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND



ROCR\_0002\_1.400\_R\_1.jpg



|                                |   |  |                         |                                  |       |
|--------------------------------|---|--|-------------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0002-1.456-R                         |  |                         |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |                         |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 45.70                   |                                  |       |
| <b>Barrier Description</b>     |   |  |                         |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT      | <b>Barrier Function:</b>   | TRAFFIC                 |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                   | <b>Post Material:</b>  | WOOD                    |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 2534                    |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | BOTH INSIDE AND OUTSIDE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW                                       |  |                         |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |                         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | TL-2                    | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                            | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO                      | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A                     |                                  |       |
| <b>Average Measurements</b>    |   |  |                         |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0                     | <b>Post Spacing (In.):</b>       | 119.9 |
| <b>Height (In.):</b>           | 28.2                                      | <b>Lateral Offset (In.):</b>   | 26.7                    | <b>Road Grade (%):</b>           | 0.60  |
| <b>Physical Condition</b>      |   |  |                         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height ranges from 1 in below to 4 in above the 27-in design height. |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | Six 10-ft rails have been broken due to impact.  |                         |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | One 10-ft rail has longitudinal cracks approximately 1-in wide along the entire length.                |                         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                               |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                         |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                         |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.456-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 45.70 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$3548 |
| <b>Brief Workorder:</b> | Replace 70 feet of rail.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace Rail at \$25- per -Lin. Ft. for 70 LF = \$1750. Replace 7 10-foot rails<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# **Rock Creek Park**

**ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND**

## **Barrier Condition Photos**

**Condition photos are not available for ROCR-0002-1.456-R.**

|                                |   |  |                  |                                  |       |
|--------------------------------|---|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0002-1.949-R                         |  |                  |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>   | 35.20            |                                  |       |
| <b>Barrier Description</b>     |   |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT      | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                   | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>   | 77               |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                    |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                            | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |       |
| <b>Average Measurements</b>    |   |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 120.0 |
| <b>Height (In.):</b>           | 29.0                                      | <b>Lateral Offset (In.):</b>   | 51.0             | <b>Road Grade (%):</b>           | 0.50  |
| <b>Physical Condition</b>      |   |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height ranges from 0 in to 4 in above 27 in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                     |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.   |                  |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.949-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 35.20 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_1.949\_R\_1.jpg

|                                |   |   |         |                                  |       |
|--------------------------------|---|---|---------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0002-1.979-R                         |   |         |                                  |       |
| <b>Route Name:</b>             | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |   |         |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010                                | <b>Barrier Rating:</b>  | 29.60   |                                  |       |
| <b>Barrier Description</b>     |   |   |         |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT      | <b>Barrier Function:</b>  | TRAFFIC |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                   | <b>Post Material:</b>   | WOOD    |                                  |       |
| <b>Blockout Type:</b>          | N/A                                       | <b>Length (ft.):</b>  | 181     |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                    |   |         |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                      | <b>Barrier Test Level:</b>  | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                      | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                      | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |       |
| <b>Average Measurements</b>    |   |   |         |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0     | <b>Post Spacing (In.):</b>       | 119.0 |
| <b>Height (In.):</b>           | 28.7                                      | <b>Lateral Offset (In.):</b>  | 30.7    | <b>Road Grade (%):</b>           | 0.70  |
| <b>Physical Condition</b>      |   |   |         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>              | No alignment deflection observed. Height ranges from 1 in below 27 in design height to 5 in over. |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>             | No breaking or cracking observed.   |         |                                  |       |
|                                | <b>Missing Elements:</b>                  | No missing elements observed.   |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          | No corrosion or weathering observed.  |         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>              |   |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>             |   |         |                                  |       |
|                                | <b>Missing Elements:</b>                  |   |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>          |   |         |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0002-1.979-R                         |                        |       |
| <b>Route Name:</b>      | ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND |                        |       |
| <b>Inspection Date:</b> | 11/05/2010                                | <b>Barrier Rating:</b> | 29.60 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

ROUTE 0002: ROCK CREEK AND POTOMAC PARKWAY SOUTHBOUND

## Barrier Condition Photos



ROCR\_0002\_1.979\_R\_1.jpg

|                                |                                      |   |                 |                                  |       |
|--------------------------------|--------------------------------------|---|-----------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0010-1.753-L                    |   |                 |                                  |       |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                |   |                 |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010                           | <b>Barrier Rating:</b>  | 34.40           |                                  |       |
| <b>Barrier Description</b>     |                                      |   |                 |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC         |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD            |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 250             |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | HIGH                                 |   |                 |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |   |                 |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>   | NO              |                                  |       |
| <b>Average Measurements</b>    |                                      |   |                 |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0             | <b>Post Spacing (In.):</b>       | 118.8 |
| <b>Height (In.):</b>           | 25.2                                 | <b>Lateral Offset (In.):</b>  | 98.5            | <b>Road Grade (%):</b>           | 0.30  |
| <b>Physical Condition</b>      |                                      |   |                 |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height ranges from 3 in to 7 in below 27 in design height for 30ft 1 in to 3 in below for 30ft and from 1 in below to 1 in above for 130ft. |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                 |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                 |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.  |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                 |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                 |                                  |       |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-1.753-L     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 34.40 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2282 |
| <b>Brief Workorder:</b> | Raise 60 feet of barrier up to 27-in. design height.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 60 LF = \$600. Raise 60 feet of barrier up to 27-in. design height.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_1.753\_L\_1.jpg**

|                                |                                   |  |                  |                                  |       |
|--------------------------------|-----------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0010-1.760-R                 |  |                  |                                  |       |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST             |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010                        | <b>Barrier Rating:</b>   | 38.20            |                                  |       |
| <b>Barrier Description</b>     |                                   |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITH BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG           | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | WOOD                              | <b>Length (ft.):</b>   | 115              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                            |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                   |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                              | <b>Barrier Test Level:</b>   | TL-3             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG BURIED                    | <b>Is Beg. End Trtmt Crashworthy?:</b>   | YES              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                    | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |                                   |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 118.3 |
| <b>Height (In.):</b>           | 24.7                              | <b>Lateral Offset (In.):</b>   | 88.3             | <b>Road Grade (%):</b>           | 0.70  |
| <b>Physical Condition</b>      |                                   |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>      | No alignment deflection observed. Height is 1 to 3 in below the 27-in design height along 30 ft of rail and 3 to 4 in below along 35 ft of rail. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>          | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>      | Alignment is acceptable. Height is within 1-in. of 27-in. design height.   |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>          | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |       |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-1.760-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 38.20 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2338 |
| <b>Brief Workorder:</b> | Raise 65 feet of rail up to 27-in. design height.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 65 LF = \$650. Raise 65 feet of rail up to 27-in. design height.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_1.760\_R\_1.jpg**

|                                |  |   |                 |                                  |      |
|--------------------------------|--|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-2.702-L                        |   |                 |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>  | 28.10           |                                  |      |
| <b>Barrier Description</b>     |  |   |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 17              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 20.7            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 31.7                                     | <b>Lateral Offset (In.):</b>  | 89.0            | <b>Road Grade (%):</b>           | 0.70 |
| <b>Physical Condition</b>      |  |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection was observed. Height is 7 - 9 in above 24-in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking was observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements were observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering was observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                 |                                  |      |



|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-2.702-L     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/06/2010            | <b>Barrier Rating:</b> | 28.10 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_2.702\_L\_1.jpg**

|                                |  |  |         |                                  |      |
|--------------------------------|--|--|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-2.718-R                        |  |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |  |         |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>   | 25.20   |                                  |      |
| <b>Barrier Description</b>     |  |  |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 19      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |  |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |  |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 20.7    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 33.7                                     | <b>Lateral Offset (In.):</b>   | 89.6    | <b>Road Grade (%):</b>           | 1.00 |
| <b>Physical Condition</b>      |  |  |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 9 - 10 in above the 24-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |         |                                  |      |

|                               |                       |                        |     |                     |     |
|-------------------------------|-----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0010-2.718-R     |                        |     |                     |     |
| <b>Route Name:</b>            | BEACH DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/06/2010            | <b>Barrier Rating:</b> |     | 25.20               |     |
| <b>Repair Recommendations</b> |                       |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION             | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                   |                        |     |                     |     |
| <b>Workorder:</b>             |                       |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_2.718\_R\_1.jpg**

|                                |  |  |                 |                                  |      |
|--------------------------------|--|--|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-2.822-R                        |  |                 |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |  |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>   | 32.50           |                                  |      |
| <b>Barrier Description</b>     |  |  |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 18              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |  |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |  |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 18.0            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 22.2                                     | <b>Lateral Offset (In.):</b>   | 69.6            | <b>Road Grade (%):</b>           | 0.70 |
| <b>Physical Condition</b>      |  |  |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height ranges from 1 in to 2 in below 24 in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | 1 stone is missing.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |                 |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-2.822-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/06/2010            | <b>Barrier Rating:</b> | 32.50 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1788 |
| <b>Brief Workorder:</b> | Replace one stone.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace stone at \$150- per - for 1 = \$150.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_2.822\_R\_1.jpg**



|                                |  |   |                  |                                  |      |
|--------------------------------|--|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-2.823-L                        |   |                  |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>  | 35.70            |                                  |      |
| <b>Barrier Description</b>     |  |   |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 16               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                      |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |  |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 19.0             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 22.2                                     | <b>Lateral Offset (In.):</b>  | 51.7             | <b>Road Grade (%):</b>           | 0.90 |
| <b>Physical Condition</b>      |  |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection was observed. Height is 1 - 2 in below 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking was observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 | 1 stone is missing from departure end.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering was observed except for 1 missing stone.                 |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                  |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-2.823-L     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/06/2010            | <b>Barrier Rating:</b> | 35.70 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1788 |
| <b>Brief Workorder:</b> | Replace 1 missing stone.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace Stone at \$150- per -EA for 1 = \$150.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_2.823\_L\_1.jpg**

|                                |  |  |         |                                  |      |
|--------------------------------|--|--|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-2.911-L                        |  |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |  |         |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>   | 27.10   |                                  |      |
| <b>Barrier Description</b>     |  |  |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 10      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                      |  |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |  |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 18.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 21.2                                     | <b>Lateral Offset (In.):</b>   | 67.3    | <b>Road Grade (%):</b>           | 1.20 |
| <b>Physical Condition</b>      |  |  |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 2 to 3 in below the 24-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |         |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-2.911-L     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/06/2010            | <b>Barrier Rating:</b> | 27.10 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_2.911\_L\_1.jpg**

|                                |  |   |                  |                                  |      |
|--------------------------------|--|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-3.231-L                        |   |                  |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 40.00            |                                  |      |
| <b>Barrier Description</b>     |  |   |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 13               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35                                       | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                      |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                     | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |  |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 12.5             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 22.7                                     | <b>Lateral Offset (In.):</b>  | 86.0             | <b>Road Grade (%):</b>           | 2.50 |
| <b>Physical Condition</b>      |  |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection was observed. Height is 1-2 in below 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking was observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements were observed.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No elements are loose but grout is deteriorated on front and back faces.          |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                  |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-3.231-L     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 40.00 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2546 |
| <b>Brief Workorder:</b> | Re-point grout on front and back faces.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 6 SY = \$840. Repoint front and back of barrier. $[2(13ft)(1.9ft)] / 9 = 5.5$ SY.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**



**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_3.231\_L\_1.jpg**

|                                |  |   |         |                                  |      |
|--------------------------------|--|---|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-3.808-R                        |   |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |         |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 30.80   |                                  |      |
| <b>Barrier Description</b>     |  |   |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 33      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |   |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |   |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 39.2    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 28.2                                     | <b>Lateral Offset (In.):</b>  | 20.2    | <b>Road Grade (%):</b>           | 5.20 |
| <b>Physical Condition</b>      |  |   |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 0 to 10 in above the 24-in design height along entire length. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |         |                                  |      |

|                               |                       |                        |     |                     |     |
|-------------------------------|-----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0010-3.808-R     |                        |     |                     |     |
| <b>Route Name:</b>            | BEACH DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/08/2010            | <b>Barrier Rating:</b> |     | 30.80               |     |
| <b>Repair Recommendations</b> |                       |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION             | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                   |                        |     |                     |     |
| <b>Workorder:</b>             |                       |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_3.808\_R\_1.jpg**

|                                |  |   |         |                                  |      |
|--------------------------------|--|---|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-3.810-L                        |   |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |         |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 37.00   |                                  |      |
| <b>Barrier Description</b>     |  |   |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 28      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |   |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 34.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 24.2                                     | <b>Lateral Offset (In.):</b>  | 20.0    | <b>Road Grade (%):</b>           | 4.20 |
| <b>Physical Condition</b>      |  |   |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height ranges from 3 in to 4 in below 24 in design height for 5ft and from 3 in below to 4 in above design height for 23ft. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |         |                                  |      |

|                               |                       |                        |     |                     |     |
|-------------------------------|-----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0010-3.810-L     |                        |     |                     |     |
| <b>Route Name:</b>            | BEACH DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/08/2010            | <b>Barrier Rating:</b> |     | 37.00               |     |
| <b>Repair Recommendations</b> |                       |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION             | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                   |                        |     |                     |     |
| <b>Workorder:</b>             |                       |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_3.810\_L\_1.jpg**

|                                |  |   |         |                                  |      |
|--------------------------------|--|---|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-3.828-R                        |   |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |         |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 36.70   |                                  |      |
| <b>Barrier Description</b>     |  |   |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 26      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |   |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |   |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 40.7    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 35.2                                     | <b>Lateral Offset (In.):</b>  | 26.0    | <b>Road Grade (%):</b>           | 7.10 |
| <b>Physical Condition</b>      |  |   |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 7 to 15 in above the 24-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |         |                                  |      |



|                               |                       |                        |     |                     |     |
|-------------------------------|-----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0010-3.828-R     |                        |     |                     |     |
| <b>Route Name:</b>            | BEACH DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/08/2010            | <b>Barrier Rating:</b> |     | 36.70               |     |
| <b>Repair Recommendations</b> |                       |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION             | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                   |                        |     |                     |     |
| <b>Workorder:</b>             |                       |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_3.828\_R\_1.jpg**

|                                |  |   |         |                                  |      |
|--------------------------------|--|---|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-3.831-L                        |   |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |         |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 32.70   |                                  |      |
| <b>Barrier Description</b>     |  |   |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 26      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |   |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 36.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 30.7                                     | <b>Lateral Offset (In.):</b>  | 24.0    | <b>Road Grade (%):</b>           | 6.50 |
| <b>Physical Condition</b>      |  |   |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height ranges from 2 in to 10 in above 24 in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |         |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-3.831-L     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 32.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_3.831\_L\_1.jpg**

|                                |  |   |         |                                  |      |
|--------------------------------|--|---|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-4.642-R                        |   |         |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |         |                                  |      |
| <b>Inspection Date:</b>        | 11/09/2010                               | <b>Barrier Rating:</b>  | 47.50   |                                  |      |
| <b>Barrier Description</b>     |  |   |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 28      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |   |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |   |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 23.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 12.6                                     | <b>Lateral Offset (In.):</b>  | 38.0    | <b>Road Grade (%):</b>           | 1.90 |
| <b>Physical Condition</b>      |  |   |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection was observed. Barrier is part of a stone bridge abutment. Design height appears to be 16 in based on field observation. Height was measured to be 3 - 4 in below assumed design height along 18 ft.                   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking was observed. Barrier is part of a stone bridge abutment that wraps around radius to Park Road (DC control). Some stones are broken off barrier in the radius but this was assumed to be outside of ROCR maintenance. |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements were observed except for the stones broken off of the DC-controlled portion of barrier.   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering was observed.  |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |         |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-4.642-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/09/2010            | <b>Barrier Rating:</b> | 47.50 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_4.642\_R\_1.jpg**



|                                |  |  |                  |                                  |      |
|--------------------------------|--|--|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-4.720-R                        |  |                  |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |  |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>   | 48.50            |                                  |      |
| <b>Barrier Description</b>     |  |  |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 87               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                      |  |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |      |
| <b>Average Measurements</b>    |  |  |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 24.2             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 18.0                                     | <b>Lateral Offset (In.):</b>   | 56.7             | <b>Road Grade (%):</b>           | 1.60 |
| <b>Physical Condition</b>      |  |  |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 6-8 in below the 24-in design height due to soil build-up in front of barrier along 30 ft and 5-6 in below design height along 57 ft of barrier. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 | 2 stones have fallen out of place and are on the ground.   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed. There is soil build-up in front of barrier.   |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |                  |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-4.720-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 48.50 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1914 |
| <b>Brief Workorder:</b> | Remove 2 inches of soil from 30 feet of wall with a grader and repoint 2 stones.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Grader at \$125- per -Hour for 1 Hrs = \$125. Remove 2 inches of soil from base of wall for 30 feet.<br>Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 1 SY = \$140. Repoint approximately 1 sq yd.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_4.720\_R\_1.jpg**

|                                |  |   |                  |                                  |      |
|--------------------------------|--|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-5.244-R                        |   |                  |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 58.20            |                                  |      |
| <b>Barrier Description</b>     |  |   |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 298              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |  |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 23.2             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 19.0                                     | <b>Lateral Offset (In.):</b>  | 28.7             | <b>Road Grade (%):</b>           | 1.00 |
| <b>Physical Condition</b>      |  |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height ranges from 3 in to 6 in below 24 in design height for 200ft and remains at 3 in below for 98ft. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                  |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-5.244-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 58.20 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_5.244\_R\_1.jpg**

|                                |                                      |  |                  |                                  |       |
|--------------------------------|--------------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0010-5.338-R                    |  |                  |                                  |       |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010                           | <b>Barrier Rating:</b>   | 42.90            |                                  |       |
| <b>Barrier Description</b>     |                                      |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>   | 586              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35                                   | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW                                  |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                                 | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |       |
| <b>Average Measurements</b>    |                                      |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 119.3 |
| <b>Height (In.):</b>           | 28.2                                 | <b>Lateral Offset (In.):</b>   | 23.0             | <b>Road Grade (%):</b>           | 1.00  |
| <b>Physical Condition</b>      |                                      |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection was observed. Height is 1 - 2 in below 27-in design height along 206 ft. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | Rails have longitudinal splits over less than 5 percent of cross section.                        |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         |  |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        |  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             |  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     |  |                  |                                  |       |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-5.338-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 42.90 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$3888 |
| <b>Brief Workorder:</b> | Raise 206 LF of guardrail to 27-inch design height.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 206 LF = \$2060. Raise 206ft. of barrier up to 27-inch design height.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**



**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_5.338\_R\_1.jpg**

|                                |  |   |                 |                                  |      |
|--------------------------------|--|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0010-5.461-R                        |   |                 |                                  |      |
| <b>Route Name:</b>             | BEACH DRIVE NORTHWEST                    |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 35.70           |                                  |      |
| <b>Barrier Description</b>     |  |   |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 633             |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 24.7            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 25.0                                     | <b>Lateral Offset (In.):</b>  | 41.7            | <b>Road Grade (%):</b>           | 1.90 |
| <b>Physical Condition</b>      |  |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 1-in above the 24-in design height along entire length. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                 |                                  |      |

|                         |                       |                        |       |
|-------------------------|-----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0010-5.461-R     |                        |       |
| <b>Route Name:</b>      | BEACH DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010            | <b>Barrier Rating:</b> | 35.70 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0010: BEACH DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0010\_5.461\_R\_1.jpg**

|                                |                                   |   |                         |                                  |       |
|--------------------------------|-----------------------------------|---|-------------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0012-0.384-R                 |   |                         |                                  |       |
| <b>Route Name:</b>             | WISE ROAD NORTHWEST               |   |                         |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                        | <b>Barrier Rating:</b>  | 42.50                   |                                  |       |
| <b>Barrier Description</b>     |                                   |   |                         |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITH BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC                 |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG           | <b>Post Material:</b>   | WOOD                    |                                  |       |
| <b>Blockout Type:</b>          | WOOD                              | <b>Length (ft.):</b>  | 722                     |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                | <b>Placement with Respect to Road:</b>  | BOTH INSIDE AND OUTSIDE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                            |   |                         |                                  |       |
| <b>Barrier Crashworthiness</b> |                                   |   |                         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                              | <b>Barrier Test Level:</b>  | TL-3                    | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                    | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO                      | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                    | <b>Ending End Trtmt Crashworthy?:</b>   | NO                      |                                  |       |
| <b>Average Measurements</b>    |                                   |   |                         |                                  |       |
| <b>Design Height (In.):</b>    | 27                                | <b>Width (In.):</b>   | 0.0                     | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 27.5                              | <b>Lateral Offset (In.):</b>  | 33.7                    | <b>Road Grade (%):</b>           | 3.10  |
| <b>Physical Condition</b>      |                                   |   |                         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>      | No alignment deflection observed. 30 ft of barrier is more than 3 in below 27-in design height. The rest is 0.5 in below to 1 in above design height. |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.   |                         |                                  |       |
|                                | <b>Missing Elements:</b>          | No missing elements observed.   |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.  |                         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>      | Alignment is acceptable. Height is within 1-in. of 27-in. design height.  |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.   |                         |                                  |       |
|                                | <b>Missing Elements:</b>          | No missing elements observed.   |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.  |                         |                                  |       |

|                         |                     |                        |       |
|-------------------------|---------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0012-0.384-R   |                        |       |
| <b>Route Name:</b>      | WISE ROAD NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010          | <b>Barrier Rating:</b> | 42.50 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1952 |
| <b>Brief Workorder:</b> | Raise 30 feet of barrier to 27-inch design height.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 30 LF = \$300. Raise 30 feet of barrier to 27-inch design height.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0012: WISE ROAD NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0012\_0.384\_R\_1.jpg**

|                                |  |  |         |                                  |      |
|--------------------------------|--|--|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0014-0.216-L                        |  |         |                                  |      |
| <b>Route Name:</b>             | BINGHAM DRIVE NORTHWEST                  |  |         |                                  |      |
| <b>Inspection Date:</b>        | 11/03/2010                               | <b>Barrier Rating:</b>   | 28.20   |                                  |      |
| <b>Barrier Description</b>     |  |  |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 25      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW                                      |  |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |  |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 19.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 18.0                                     | <b>Lateral Offset (In.):</b>   | 43.0    | <b>Road Grade (%):</b>           | 1.70 |
| <b>Physical Condition</b>      |  |  |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 6 in below 24 in design height for barrier length. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |         |                                  |      |



|                               |                         |                        |     |                     |     |
|-------------------------------|-------------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0014-0.216-L       |                        |     |                     |     |
| <b>Route Name:</b>            | BINGHAM DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010              | <b>Barrier Rating:</b> |     | 28.20               |     |
| <b>Repair Recommendations</b> |                         |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION               | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                     |                        |     |                     |     |
| <b>Workorder:</b>             |                         |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0014: BINGHAM DRIVE NORTHWEST

## Barrier Condition Photos



ROCR\_0014\_0.216\_L\_1.jpg

|                                |  |   |                 |                                  |      |
|--------------------------------|--|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0015-0.003-L                        |   |                 |                                  |      |
| <b>Route Name:</b>             | JOYCE ROAD NORTHWEST                     |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>  | 17.80           |                                  |      |
| <b>Barrier Description</b>     |  |   |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 18              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 21.2            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 31.2                                     | <b>Lateral Offset (In.):</b>  | 94.6            | <b>Road Grade (%):</b>           | 0.50 |
| <b>Physical Condition</b>      |  |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection was observed. Height is 7 - 8 in above 24-in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking was observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements were observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering was observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                 |                                  |      |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0015-0.003-L    |                        |     |                     |     |
| <b>Route Name:</b>            | JOYCE ROAD NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/06/2010           | <b>Barrier Rating:</b> |     | 17.80               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0015: JOYCE ROAD NORTHWEST**

**Barrier Condition Photos**

**Condition photos are not available for ROCR-0015-0.003-L.**

|                                |  |  |         |                                  |      |
|--------------------------------|--|--|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0015-0.155-R                        |  |         |                                  |      |
| <b>Route Name:</b>             | JOYCE ROAD NORTHWEST                     |  |         |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>   | 15.00   |                                  |      |
| <b>Barrier Description</b>     |  |  |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 25      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                   |  |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |  |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 20.2    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 32.7                                     | <b>Lateral Offset (In.):</b>   | 83.6    | <b>Road Grade (%):</b>           | 0.80 |
| <b>Physical Condition</b>      |  |  |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 8 to 9 in above 24-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |         |                                  |      |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0015-0.155-R    |                        |     |                     |     |
| <b>Route Name:</b>            | JOYCE ROAD NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/06/2010           | <b>Barrier Rating:</b> |     | 15.00               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0015: JOYCE ROAD NORTHWEST**

**Barrier Condition Photos**

**Condition photos are not available for ROCR-0015-0.155-R.**



|                                |  |  |                  |                                  |      |
|--------------------------------|--|--|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0015-0.206-L                        |  |                  |                                  |      |
| <b>Route Name:</b>             | JOYCE ROAD NORTHWEST                     |  |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/06/2010                               | <b>Barrier Rating:</b>   | 28.20            |                                  |      |
| <b>Barrier Description</b>     |  |  |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 279              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |  |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>   | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |      |
| <b>Average Measurements</b>    |  |  |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 22.0             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 26.7                                     | <b>Lateral Offset (In.):</b>   | 79.6             | <b>Road Grade (%):</b>           | 1.10 |
| <b>Physical Condition</b>      |  |  |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height ranges from 0 in to 6 in above 24 in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | A 2 ft section has concrete missing from the top cap due to impact.                          |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |                  |                                  |      |

|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0015-0.206-L    |                        |       |
| <b>Route Name:</b>      | JOYCE ROAD NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/06/2010           | <b>Barrier Rating:</b> | 28.20 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2723 |
| <b>Brief Workorder:</b> | Patch a 2-foot section of concrete cap that has been impacted.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Structural Concrete at \$1000- per -Cu. Yd. for 1 CY = \$1000. [(2ft)(.5ft)(.5ft)] /27 = .02 CY.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0015: JOYCE ROAD NORTHWEST**

**Barrier Condition Photos**

**Condition photos are not available for ROCR-0015-0.206-L.**

|                                |                                      |  |                  |                                  |       |
|--------------------------------|--------------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.272-L                    |  |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>   | 23.60            |                                  |       |
| <b>Barrier Description</b>     |                                      |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>   | 146              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |                                      |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 119.6 |
| <b>Height (In.):</b>           | 28.7                                 | <b>Lateral Offset (In.):</b>   | 23.0             | <b>Road Grade (%):</b>           | 0.90  |
| <b>Physical Condition</b>      |                                      |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height is 1.5 to 2 in above the 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.               |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or crackin observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-0.272-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 23.60               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.272\_L\_1.jpg**

|                                |                                      |   |                  |                                  |       |
|--------------------------------|--------------------------------------|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.406-R                    |   |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 19.70            |                                  |       |
| <b>Barrier Description</b>     |                                      |   |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 75               |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW                                  |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>  | YES              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG BURIED                       | <b>Ending End Trtmt Crashworthy?:</b>   | YES              |                                  |       |
| <b>Average Measurements</b>    |                                      |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 120.0 |
| <b>Height (In.):</b>           | 29.7                                 | <b>Lateral Offset (In.):</b>  | 69.0             | <b>Road Grade (%):</b>           | 5.60  |
| <b>Physical Condition</b>      |                                      |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height ranges from 1 in to 3 in above 27 in design height.  |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | No alignment deflection observed. Height on one rail of end treatment drops abruptly by 6 in due to missing hardware. Otherwise height was within 1in. of 27-in. design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | Missing hardware observed on one rail causing abrupt drop.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                  |                                  |       |

|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0016-0.406-R    |                        |       |
| <b>Route Name:</b>      | ROSS DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 19.70 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1733 |
| <b>Brief Workorder:</b> | Reattach missing hardware and raise 10ft. of rail up to 27-in. design height on end treatment.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 10 LF = \$100. Reattach missing hardware and raise 10ft. of rail up to 27-in. design height on end treatment.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**



**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.406\_R\_1.jpg**

|                                |                                      |   |                  |                                  |       |
|--------------------------------|--------------------------------------|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.462-L                    |   |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 27.80            |                                  |       |
| <b>Barrier Description</b>     |                                      |   |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 196              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG BURIED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>  | YES              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |       |
| <b>Average Measurements</b>    |                                      |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 119.6 |
| <b>Height (In.):</b>           | 29.7                                 | <b>Lateral Offset (In.):</b>  | 21.0             | <b>Road Grade (%):</b>           | 4.80  |
| <b>Physical Condition</b>      |                                      |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection was observed. Height is 2 - 3 in above 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.            |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |                  |                                  |       |

|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0016-0.462-L    |                        |       |
| <b>Route Name:</b>      | ROSS DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 27.80 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.462\_L\_1.jpg**

|                                |                                      |  |                  |                                  |       |
|--------------------------------|--------------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.526-L                    |  |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>   | 23.60            |                                  |       |
| <b>Barrier Description</b>     |                                      |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>   | 144              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |                                      |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 28.2                                 | <b>Lateral Offset (In.):</b>   | 23.2             | <b>Road Grade (%):</b>           | 0.70  |
| <b>Physical Condition</b>      |                                      |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height is 1 to 1.5 in above the 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.               |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-0.526-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 23.60               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.526\_L\_1.jpg**

|                                |                                      |   |         |                                  |                      |
|--------------------------------|--------------------------------------|---|---------|----------------------------------|----------------------|
| <b>Barrier ID:</b>             | ROCR-0016-0.539-R                    |   |         |                                  |                      |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |         |                                  |                      |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 19.30   |                                  |                      |
| <b>Barrier Description</b>     |                                      |   |         |                                  |                      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC |                                  |                      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD    |                                  |                      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 30      |                                  |                      |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |                      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |         |                                  |                      |
| <b>Barrier Crashworthiness</b> |                                      |   |         |                                  |                      |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES                  |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO      | <b>Approach Transition Type:</b> | RIGID SBT WALL - SBT |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | NO      |                                  |                      |
| <b>Average Measurements</b>    |                                      |   |         |                                  |                      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0     | <b>Post Spacing (In.):</b>       | 59.0                 |
| <b>Height (In.):</b>           | 25.0                                 | <b>Lateral Offset (In.):</b>  | 12.0    | <b>Road Grade (%):</b>           | 1.00                 |
| <b>Physical Condition</b>      |                                      |   |         |                                  |                      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height is 2 in below the 27-in design height. |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |         |                                  |                      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.        |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |         |                                  |                      |



|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0016-0.539-R    |                        |       |
| <b>Route Name:</b>      | ROSS DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 19.30 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.539\_R\_1.jpg**

|                                |                                      |   |         |                                  |                      |
|--------------------------------|--------------------------------------|---|---------|----------------------------------|----------------------|
| <b>Barrier ID:</b>             | ROCR-0016-0.608-L                    |   |         |                                  |                      |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |         |                                  |                      |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 15.00   |                                  |                      |
| <b>Barrier Description</b>     |                                      |   |         |                                  |                      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC |                                  |                      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD    |                                  |                      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 36      |                                  |                      |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |                      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |         |                                  |                      |
| <b>Barrier Crashworthiness</b> |                                      |   |         |                                  |                      |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES                  |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | RIGID SBT WALL - SBT |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |                      |
| <b>Average Measurements</b>    |                                      |   |         |                                  |                      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0     | <b>Post Spacing (In.):</b>       | 80.1                 |
| <b>Height (In.):</b>           | 28.2                                 | <b>Lateral Offset (In.):</b>  | 17.0    | <b>Road Grade (%):</b>           | 1.30                 |
| <b>Physical Condition</b>      |                                      |   |         |                                  |                      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection was observed. Height is 1 - 1.5 in above 27-in design height. |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |         |                                  |                      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         |   |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        |   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             |   |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     |   |         |                                  |                      |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-0.608-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 15.00               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**

**Condition photos are not available for ROCR-0016-0.608-L.**

|                                |                                      |   |         |                                  |                      |
|--------------------------------|--------------------------------------|---|---------|----------------------------------|----------------------|
| <b>Barrier ID:</b>             | ROCR-0016-0.815-L                    |   |         |                                  |                      |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |         |                                  |                      |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 15.00   |                                  |                      |
| <b>Barrier Description</b>     |                                      |   |         |                                  |                      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC |                                  |                      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD    |                                  |                      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 34      |                                  |                      |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |                      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |         |                                  |                      |
| <b>Barrier Crashworthiness</b> |                                      |   |         |                                  |                      |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES                  |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | RIGID SBT WALL - SBT |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>   | NO      |                                  |                      |
| <b>Average Measurements</b>    |                                      |   |         |                                  |                      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0     | <b>Post Spacing (In.):</b>       | 58.5                 |
| <b>Height (In.):</b>           | 26.0                                 | <b>Lateral Offset (In.):</b>  | 7.3     | <b>Road Grade (%):</b>           | 1.30                 |
| <b>Physical Condition</b>      |                                      |   |         |                                  |                      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height is 1-in or less below the 27-in design height. |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |         |                                  |                      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |         |                                  |                      |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-0.815-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 15.00               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.815\_L\_1.jpg**



|                                |                                      |   |         |                                  |                      |
|--------------------------------|--------------------------------------|---|---------|----------------------------------|----------------------|
| <b>Barrier ID:</b>             | ROCR-0016-0.815-R                    |   |         |                                  |                      |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |         |                                  |                      |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 9.30    |                                  |                      |
| <b>Barrier Description</b>     |                                      |   |         |                                  |                      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC |                                  |                      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD    |                                  |                      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 51      |                                  |                      |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |                      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |         |                                  |                      |
| <b>Barrier Crashworthiness</b> |                                      |   |         |                                  |                      |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES                  |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | RIGID SBT WALL - SBT |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | NO      |                                  |                      |
| <b>Average Measurements</b>    |                                      |   |         |                                  |                      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0     | <b>Post Spacing (In.):</b>       | 88.1                 |
| <b>Height (In.):</b>           | 26.7                                 | <b>Lateral Offset (In.):</b>  | 67.0    | <b>Road Grade (%):</b>           | 2.60                 |
| <b>Physical Condition</b>      |                                      |   |         |                                  |                      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection was observed. Height is 1 - 2 in below 27-in design height along 30 ft and within 1 in of design height along the rest. |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |         |                                  |                      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         |   |         |                                  |                      |
|                                | <b>Breaking and Cracking:</b>        |   |         |                                  |                      |
|                                | <b>Missing Elements:</b>             |   |         |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>     |   |         |                                  |                      |

|                         |                      |                        |      |
|-------------------------|----------------------|------------------------|------|
| <b>Barrier ID:</b>      | ROCR-0016-0.815-R    |                        |      |
| <b>Route Name:</b>      | ROSS DRIVE NORTHWEST |                        |      |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 9.30 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1952 |
| <b>Brief Workorder:</b> | Raise 30 feet of guardrail to 27-inch design height.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 30 LF = \$300. Raise guardrail to 27-inch design height<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.815\_R\_1.jpg**

|                                |                                      |  |                  |                                  |       |
|--------------------------------|--------------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.856-L                    |  |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>   | 26.50            |                                  |       |
| <b>Barrier Description</b>     |                                      |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>   | 274              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |                                      |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 120.0 |
| <b>Height (In.):</b>           | 28.7                                 | <b>Lateral Offset (In.):</b>   | 22.0             | <b>Road Grade (%):</b>           | 2.50  |
| <b>Physical Condition</b>      |                                      |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height ranges from 0.5 in to 2.5 in above 27 in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                         |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-0.856-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 26.50               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.856\_L\_1.jpg**

|                                |                                      |  |                 |                                  |       |
|--------------------------------|--------------------------------------|--|-----------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.856-R                    |  |                 |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |  |                 |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>   | 15.10           |                                  |       |
| <b>Barrier Description</b>     |                                      |  |                 |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC         |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>  | WOOD            |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>   | 170             |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |  |                 |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |  |                 |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>   | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>  | N/A             |                                  |       |
| <b>Average Measurements</b>    |                                      |  |                 |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>  | 0.0             | <b>Post Spacing (In.):</b>       | 118.6 |
| <b>Height (In.):</b>           | 28.7                                 | <b>Lateral Offset (In.):</b>   | 25.0            | <b>Road Grade (%):</b>           | 0.40  |
| <b>Physical Condition</b>      |                                      |  |                 |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | 2 rails are leaning forward out of alignment by 6 - 12 in. Height is 0.5 - 3 in above 27-in design height.         |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | 2 rails are leaning forward and steel backing at post connection is bent likely caused by impact from fallen tree. |                 |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.   |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.   |                 |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.   |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.  |                 |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.   |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.   |                 |                                  |       |

|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0016-0.856-R    |                        |       |
| <b>Route Name:</b>      | ROSS DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 15.10 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$3163 |
| <b>Brief Workorder:</b> | Replace 20 feet of barrier with Steel-Backed Timber w/o blockout guardrail.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Remove Guardrail at \$10- per -Lin. Ft. for 20 LF = \$200. Remove out of alignment barrier with bent steel backing. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 20 LF = \$1200. Install 20ft. of SBT w/o blockout barrier. Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**



**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.856\_R\_1.jpg**

|                                |                                      |   |                  |                                  |       |
|--------------------------------|--------------------------------------|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-0.920-L                    |   |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 23.60            |                                  |       |
| <b>Barrier Description</b>     |                                      |   |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 126              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG BURIED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>   | NO               |                                  |       |
| <b>Average Measurements</b>    |                                      |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 120.6 |
| <b>Height (In.):</b>           | 26.5                                 | <b>Lateral Offset (In.):</b>  | 21.2             | <b>Road Grade (%):</b>           | 1.80  |
| <b>Physical Condition</b>      |                                      |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | Alignment deflects 6 to 12 in along 30 ft of barrier. Height is 1 to 3 in below the 27-in design height along the same 30 ft of barrier. Otherwise height is within 1 in of design. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | 30 ft of barrier has bent steel backing.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.  |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                  |                                  |       |

|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0016-0.920-L    |                        |       |
| <b>Route Name:</b>      | ROSS DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 23.60 |

**Repair Recommendations**

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1952 |
| <b>Brief Workorder:</b> | Raise 30 feet of barrier to 27 inches and adjust alignment.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 30 LF = \$300. Raise 30 feet of barrier to 27 inches and adjust alignment<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_0.920\_L\_1.jpg**

|                                |                                      |  |                  |                                  |       |
|--------------------------------|--------------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-1.006-L                    |  |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>   | 23.60            |                                  |       |
| <b>Barrier Description</b>     |                                      |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>   | 180              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |                                      |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 120.6 |
| <b>Height (In.):</b>           | 28.5                                 | <b>Lateral Offset (In.):</b>   | 23.7             | <b>Road Grade (%):</b>           | 1.00  |
| <b>Physical Condition</b>      |                                      |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height ranges from 0.5 in to 2.0 in above 27 in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                         |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.   |                  |                                  |       |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-1.006-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 23.60               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_1.006\_L\_1.jpg**

|                                |                                      |   |                  |                                  |       |
|--------------------------------|--------------------------------------|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-1.043-L                    |   |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 23.60            |                                  |       |
| <b>Barrier Description</b>     |                                      |   |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 115              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG BURIED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>  | YES              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |       |
| <b>Average Measurements</b>    |                                      |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 28.2                                 | <b>Lateral Offset (In.):</b>  | 23.7             | <b>Road Grade (%):</b>           | 0.70  |
| <b>Physical Condition</b>      |                                      |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection was observed. Height is 1 - 1.5 in above 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.              |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |                  |                                  |       |



|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-1.043-L    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 23.60               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_1.043\_L\_1.jpg**

|                                |                                      |   |                  |                                  |       |
|--------------------------------|--------------------------------------|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0016-1.138-R                    |   |                  |                                  |       |
| <b>Route Name:</b>             | ROSS DRIVE NORTHWEST                 |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 26.50            |                                  |       |
| <b>Barrier Description</b>     |                                      |   |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 409              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                   | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                               |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                      |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED                       | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                       | <b>Ending End Trtmt Crashworthy?:</b>   | NO               |                                  |       |
| <b>Average Measurements</b>    |                                      |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 28.5                                 | <b>Lateral Offset (In.):</b>  | 22.7             | <b>Road Grade (%):</b>           | 2.40  |
| <b>Physical Condition</b>      |                                      |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | Alignment deflects less than 6 in along the barrier. Height is 0 to 3 in above the 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                                |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                  |                                  |       |

|                               |                      |                        |     |                     |     |
|-------------------------------|----------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0016-1.138-R    |                        |     |                     |     |
| <b>Route Name:</b>            | ROSS DRIVE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010           | <b>Barrier Rating:</b> |     | 26.50               |     |
| <b>Repair Recommendations</b> |                      |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION            | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                  |                        |     |                     |     |
| <b>Workorder:</b>             |                      |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0016: ROSS DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0016\_1.138\_R\_1.jpg**

|                                |                                       |   |                         |                                  |       |
|--------------------------------|---------------------------------------|---|-------------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0017-0.066-R                     |   |                         |                                  |       |
| <b>Route Name:</b>             | MORROW DRIVE NORTHWEST                |   |                         |                                  |       |
| <b>Inspection Date:</b>        | 11/09/2010                            | <b>Barrier Rating:</b>  | 49.70                   |                                  |       |
| <b>Barrier Description</b>     |                                       |   |                         |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS | <b>Barrier Function:</b>  | TRAFFIC                 |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                       | <b>Post Material:</b>   | WOOD                    |                                  |       |
| <b>Blockout Type:</b>          | N/A                                   | <b>Length (ft.):</b>  | 490                     |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                    | <b>Placement with Respect to Road:</b>  | BOTH INSIDE AND OUTSIDE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                |   |                         |                                  |       |
| <b>Barrier Crashworthiness</b> |                                       |   |                         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                  | <b>Barrier Test Level:</b>  | NCW                     | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | NONE                                  | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A                     | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                  | <b>Ending End Trtmt Crashworthy?:</b>   | N/A                     |                                  |       |
| <b>Average Measurements</b>    |                                       |   |                         |                                  |       |
| <b>Design Height (In.):</b>    | 27                                    | <b>Width (In.):</b>   | 0.0                     | <b>Post Spacing (In.):</b>       | 120.0 |
| <b>Height (In.):</b>           | 22.2                                  | <b>Lateral Offset (In.):</b>  | 42.7                    | <b>Road Grade (%):</b>           | 6.60  |
| <b>Physical Condition</b>      |                                       |   |                         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>          | Alignment deflects 6 in to 12 in for 40 ft and greater than 12 in for 30 ft. Height ranges from 3 in to 8 in below 27 in design height for 390ft and from 2 in to 3 in below for 100ft. |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>         | No breaking or cracking observed.   |                         |                                  |       |
|                                | <b>Missing Elements:</b>              | No missing elements observed.   |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>      | Five rails exhibit approximately 20 percent loss of cross section due to weathering.  |                         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>          |   |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>         |   |                         |                                  |       |
|                                | <b>Missing Elements:</b>              |   |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>      |   |                         |                                  |       |

|                         |                        |                        |       |
|-------------------------|------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0017-0.066-R      |                        |       |
| <b>Route Name:</b>      | MORROW DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/09/2010             | <b>Barrier Rating:</b> | 49.70 |

**Repair Recommendations**

|                         |  |                        |                      |                     |         |
|-------------------------|--|------------------------|----------------------|---------------------|---------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$11633 |
| <b>Brief Workorder:</b> | Replace 50 feet of rail and raise barrier to 27 inch design height.  |                        |                      |                     |         |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 490 LF = \$4900. Raise 490ft. of barrier up to 27-in. design height.<br>Replace Rail at \$25- per -Lin. Ft. for 50 LF = \$1250. Replace 50ft. of rail.<br>Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. |                        |                      |                     |         |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0017: MORROW DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0017\_0.066\_R\_1.jpg**



|                                |                                       |  |                         |                                  |       |
|--------------------------------|---------------------------------------|--|-------------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0017-0.210-R                     |  |                         |                                  |       |
| <b>Route Name:</b>             | MORROW DRIVE NORTHWEST                |  |                         |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010                            | <b>Barrier Rating:</b>   | 42.50                   |                                  |       |
| <b>Barrier Description</b>     |                                       |  |                         |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS | <b>Barrier Function:</b>   | TRAFFIC                 |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                       | <b>Post Material:</b>  | WOOD                    |                                  |       |
| <b>Blockout Type:</b>          | N/A                                   | <b>Length (ft.):</b>   | 348                     |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                    | <b>Placement with Respect to Road:</b>   | BOTH INSIDE AND OUTSIDE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                |  |                         |                                  |       |
| <b>Barrier Crashworthiness</b> |                                       |  |                         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                  | <b>Barrier Test Level:</b>   | NCW                     | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | NONE                                  | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A                     | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                  | <b>Ending End Trtmt Crashworthy?:</b>  | N/A                     |                                  |       |
| <b>Average Measurements</b>    |                                       |  |                         |                                  |       |
| <b>Design Height (In.):</b>    | 27                                    | <b>Width (In.):</b>  | 0.0                     | <b>Post Spacing (In.):</b>       | 120.6 |
| <b>Height (In.):</b>           | 23.2                                  | <b>Lateral Offset (In.):</b>   | 53.2                    | <b>Road Grade (%):</b>           | 4.20  |
| <b>Physical Condition</b>      |                                       |  |                         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>          | Alignment deflection greater than 12 in was observed over 40 ft of barrier. Height is 3 to 4 in below the 27-in design height. |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>         | No breaking or cracking observed.  |                         |                                  |       |
|                                | <b>Missing Elements:</b>              | 50 feet of barrier has been removed.   |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>      | 2 posts and 3 rails are rotten.  |                         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>          |  |                         |                                  |       |
|                                | <b>Breaking and Cracking:</b>         |  |                         |                                  |       |
|                                | <b>Missing Elements:</b>              |  |                         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>      |  |                         |                                  |       |

|                         |                        |                        |       |
|-------------------------|------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0017-0.210-R      |                        |       |
| <b>Route Name:</b>      | MORROW DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/08/2010             | <b>Barrier Rating:</b> | 42.50 |

**Repair Recommendations**

|                         |  |                        |                      |                     |         |
|-------------------------|--|------------------------|----------------------|---------------------|---------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$12491 |
| <b>Brief Workorder:</b> | Raise 298 LF of guardrail to 27-inch design height and install 50 LF of Steel-Backed Timber w/o Blockout guardrail to replace section that has been removed. Replace 30ft. of rail and 2 posts.  |                        |                      |                     |         |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 298 LF = \$2980. Raise 298 feet of barrier up to 27-inch design height. Steel-Backed Timber w/o Blockout at \$60- per -Lin. Ft. for 50 LF = \$3000. Restore 50LF of barrier that has been removed by installing SBT w/o blockout guardrail.<br>Replace Rail at \$25- per -Lin. Ft. for 30 LF = \$750. Replace 30 feet of rail.<br>Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 posts.<br>Low Speed Traffic Control at \$1475- per -Day for 3 Day(s) = \$4425. |                        |                      |                     |         |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0017: MORROW DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0017\_0.210\_R\_1.jpg**

|                                |                                       |  |         |                                  |       |
|--------------------------------|---------------------------------------|--|---------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0017-0.388-R                     |  |         |                                  |       |
| <b>Route Name:</b>             | MORROW DRIVE NORTHWEST                |  |         |                                  |       |
| <b>Inspection Date:</b>        | 11/09/2010                            | <b>Barrier Rating:</b>   | 26.70   |                                  |       |
| <b>Barrier Description</b>     |                                       |  |         |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS | <b>Barrier Function:</b>   | TRAFFIC |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                       | <b>Post Material:</b>  | WOOD    |                                  |       |
| <b>Blockout Type:</b>          | N/A                                   | <b>Length (ft.):</b>   | 181     |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25                                    | <b>Placement with Respect to Road:</b>   | TANGENT |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                |  |         |                                  |       |
| <b>Barrier Crashworthiness</b> |                                       |  |         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1                                  | <b>Barrier Test Level:</b>   | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | NONE                                  | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A     | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE                                  | <b>Ending End Trtmt Crashworthy?:</b>  | N/A     |                                  |       |
| <b>Average Measurements</b>    |                                       |  |         |                                  |       |
| <b>Design Height (In.):</b>    | 27                                    | <b>Width (In.):</b>  | 0.0     | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 26.0                                  | <b>Lateral Offset (In.):</b>   | 58.0    | <b>Road Grade (%):</b>           | 4.80  |
| <b>Physical Condition</b>      |                                       |  |         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>          | Alignment is off by 6 - 12 in along 20 ft. Height is within 1 in of 27-in design height except for 1 20-ft section where it is more than three in below. Both alignment and height deflections appear to be caused by tree impact. |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>         | Two rails are missing 2 - 3 in pieces near post connection which appears to be caused by tree impact.  |         |                                  |       |
|                                | <b>Missing Elements:</b>              | No missing elements were observed.   |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>      | No corrosion or weathering was observed.   |         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>          |  |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>         |  |         |                                  |       |
|                                | <b>Missing Elements:</b>              |  |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>      |  |         |                                  |       |

|                         |                        |                        |       |
|-------------------------|------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0017-0.388-R      |                        |       |
| <b>Route Name:</b>      | MORROW DRIVE NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/09/2010             | <b>Barrier Rating:</b> | 26.70 |

### Repair Recommendations

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2393 |
| <b>Brief Workorder:</b> | Raise 20 feet of barrier up to 27-in. design height and replace 2 rails.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 20 LF = \$200. Raise 20 feet of guardrail to 27-inch design height and adjust alignment on another 10 feet.<br>Replace Rail at \$25- per -Lin. Ft. for 20 LF = \$500. Replace broken rails<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

**Rock Creek Park**  
**ROUTE 0017: MORROW DRIVE NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0017\_0.388\_R\_1.jpg**

|                                |   |   |                  |                                  |       |
|--------------------------------|---|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0019-1.358-L                           |   |                  |                                  |       |
| <b>Route Name:</b>             | GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/09/2010                                  | <b>Barrier Rating:</b>  | 40.00            |                                  |       |
| <b>Barrier Description</b>     |   |   |                  |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS       | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                             | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>  | 294              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25  | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | HIGH  |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1  | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | NONE  | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE  | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |       |
| <b>Average Measurements</b>    |   |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 121.0 |
| <b>Height (In.):</b>           | 29.2  | <b>Lateral Offset (In.):</b>  | 39.0             | <b>Road Grade (%):</b>           | 6.10  |
| <b>Physical Condition</b>      |   |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>                | Alignment deflection over 12 in was observed along 20 ft. Height is more than 3 in below the 27-in design height along 20 ft of guardrail and 2 - 3 ins above along the rest. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>               | No breaking or cracking observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>                    | No missing elements observed.   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>            | 7 posts and 6 rails are rotten.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>                |   |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>               |   |                  |                                  |       |
|                                | <b>Missing Elements:</b>                    |   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>            |   |                  |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0019-1.358-L                           |                        |       |
| <b>Route Name:</b>      | GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/09/2010                                  | <b>Barrier Rating:</b> | 40.00 |

### Repair Recommendations

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$4262 |
| <b>Brief Workorder:</b> | Raise 20 feet of guardrail to 27 inch design height and fix alignment. Replace 7 posts and 6 rail sections.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 20 LF = \$200. Raise 20 feet of guardrail to 27-inch design height and adjust alignment.<br>Replace Post at \$100- per -Each for 7 Post(s) = \$700.<br>Replace Rail at \$25- per -Lin. Ft. for 60 LF = \$1500.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**



# Rock Creek Park

ROUTE 0019: GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST

## Barrier Condition Photos



ROCR\_0019\_1.358\_L\_1.jpg

|                                |   |   |                  |                                  |       |
|--------------------------------|---|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0019-1.523-R                           |   |                  |                                  |       |
| <b>Route Name:</b>             | GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/09/2010                                  | <b>Barrier Rating:</b>  | 44.00            |                                  |       |
| <b>Barrier Description</b>     |   |   |                  |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON<br>TIMBER POSTS       | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD                             | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>  | 189              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 25  | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                                      |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-1  | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | NONE  | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE  | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |       |
| <b>Average Measurements</b>    |   |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 122.6 |
| <b>Height (In.):</b>           | 29.7  | <b>Lateral Offset (In.):</b>  | 42.7             | <b>Road Grade (%):</b>           | 6.60  |
| <b>Physical Condition</b>      |   |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>                | Alignment is off by 6 - 12 in along 20 ft. Height is 0.5 - 4 in above 27-in design height.                      |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>               | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>                    | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>            | 13 posts and 13 rails are rotten. Posts are corroded around base and rails have voids of 1 - 2 in along length. |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>                |   |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>               |   |                  |                                  |       |
|                                | <b>Missing Elements:</b>                    |   |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>            |   |                  |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0019-1.523-R                           |                        |       |
| <b>Route Name:</b>      | GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/09/2010                                  | <b>Barrier Rating:</b> | 44.00 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$6848 |
| <b>Brief Workorder:</b> | Replace 13 posts and 130 feet of rail. Adjust alignment along 20 feet of barrier.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 20 LF = \$200. Adjust alignment<br>Replace Rail at \$25- per -Lin. Ft. for 130 LF = \$3250. Replace 130 feet of rail.<br>Replace Post at \$100- per -Each for 13 Post(s) = \$1300. Replace 13 posts.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0019: GLOVER ROAD NORTHWEST/ RIDGE ROAD NORTHWEST

## Barrier Condition Photos



ROCR\_0019\_1.523\_R\_1.jpg

|                                |  |   |                 |                                  |      |
|--------------------------------|--|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0021-0.355-R                        |   |                 |                                  |      |
| <b>Route Name:</b>             | GRANT ROAD NORTHWEST                     |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/03/2010                               | <b>Barrier Rating:</b>  | 32.70           |                                  |      |
| <b>Barrier Description</b>     |  |   |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 56              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 19.0            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 25.0                                     | <b>Lateral Offset (In.):</b>  | 48.7            | <b>Road Grade (%):</b>           | 7.70 |
| <b>Physical Condition</b>      |  |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 3 in to 5 in below 24 in design height along 15 ft and ranges from 3 in below to 4 in above along the rest. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | One missing stone observed.   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                 |                                  |      |

|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0021-0.355-R    |                        |       |
| <b>Route Name:</b>      | GRANT ROAD NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 32.70 |

**Repair Recommendations**

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1788 |
| <b>Brief Workorder:</b> | Replace one stone.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace stone at \$150- per - for 1 = \$150.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0021: GRANT ROAD NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0021\_0.355\_R\_1.jpg**

|                                |  |   |                  |                                  |      |
|--------------------------------|--|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0021-0.357-L                        |   |                  |                                  |      |
| <b>Route Name:</b>             | GRANT ROAD NORTHWEST                     |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/03/2010                               | <b>Barrier Rating:</b>  | 29.80            |                                  |      |
| <b>Barrier Description</b>     |  |   |                  |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A              |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 50               |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |  |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 20.0             | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 27.0                                     | <b>Lateral Offset (In.):</b>  | 53.0             | <b>Road Grade (%):</b>           | 9.20 |
| <b>Physical Condition</b>      |  |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection was observed. Height is 0 - 5 in above 24-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking was observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 | 3 stones are missing from top face in isolated locations.                           |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | Mortar is deteriorated from top face but stones are not loose.                      |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                  |                                  |      |



|                         |                      |                        |       |
|-------------------------|----------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0021-0.357-L    |                        |       |
| <b>Route Name:</b>      | GRANT ROAD NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/03/2010           | <b>Barrier Rating:</b> | 29.80 |

### Repair Recommendations

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$3658 |
| <b>Brief Workorder:</b> | Re-point grout and replace three stones on top face of barrier.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace stone at \$150- per -EA for 3 = \$450.<br>Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 10 SY = \$1400. [(50ft) (1.7ft)] /9 = 9.4 SY.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0021: GRANT ROAD NORTHWEST**

**Barrier Condition Photos**



**ROCR\_0021\_0.357\_L\_1.jpg**

|                                |  |   |                 |                                  |      |
|--------------------------------|--|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0024-0.189-L                        |   |                 |                                  |      |
| <b>Route Name:</b>             | PINEY BRANCH PARKWAY NORTHWEST           |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/09/2010                               | <b>Barrier Rating:</b>  | 52.50           |                                  |      |
| <b>Barrier Description</b>     |  |   |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 1078            |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                                       | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                     | <b>Barrier Test Level:</b>  | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 18.7            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 23.5                                     | <b>Lateral Offset (In.):</b>  | 105.6           | <b>Road Grade (%):</b>           | 1.70 |
| <b>Physical Condition</b>      |  |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | Alignment deflects 6-12in. along 50 ft. Alignment deflects 0-6in. along 150 ft and height of this section is 6in. below 24-in design height. 250 ft is 3-6in. below the design height. Remaining height was 3in. below to 6in. above design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | Cracking of 1/4 in or less was observed in grout over 50 ft.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | 8 cap stones are missing along 16ft. A 65ft. section of barrier has collapsed into the creek leaving what appears to be two barriers.   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | Mortar is deteriorated along 36 ft of the top and 66 ft of the front causing loose stones. The 65 feet of collapsed wall was caused by erosion.   |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |                 |                                  |      |

|                         |                                |                        |       |
|-------------------------|--------------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0024-0.189-L              |                        |       |
| <b>Route Name:</b>      | PINEY BRANCH PARKWAY NORTHWEST |                        |       |
| <b>Inspection Date:</b> | 11/09/2010                     | <b>Barrier Rating:</b> | 52.50 |

### Repair Recommendations

|                         |  |                        |                      |                     |          |
|-------------------------|--|------------------------|----------------------|---------------------|----------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$618343 |
| <b>Brief Workorder:</b> | Remove and reset 50 LF of wall to fix alignment replace 8 missing stones re-point grout on 99LF of barrier. Restore 65LF of guardwall and retaining wall that has collapsed into creek.  |                        |                      |                     |          |
| <b>Workorder:</b>       | <p>1. Remove &amp; Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 167 CF = \$41750. To fix 50LF of alignment deflection; 50LF x 2FT x 20IN/(12FT/IN) = 167CF.</p> <p>2. Replace Stones at \$150- per -EA for 8 = \$1200. Includes grout labor stones</p> <p>3. Re-Point Masonry Barrier at \$140- per -Sq. Yd. for 22 SY = \$3080. Top: [(36LF) x (20IN/12IN)] /9 = 6.7 SY. Front: [66LF x 2FT x 1FT] /9 = 14.7 SY.</p> <p>4. Low Speed Traffic Control at \$1475- per -Day for 5 Day(s) = \$7375. Removal 1 day Reset 2 days Repoint 2 days.</p> <p>5. Structural Backfill at \$50- per -Cu. Yd. for 109 CY = \$5450. [(65LF) x (15FT) x (3 FT)] /27 = 109 CY.</p> <p>6. Remove &amp; Reset Stone Masonry Guardwall at \$250- per -Cu. Ft. for 1842 CF = \$460500. [65LF x 17LF x 1.67FT)] = 1842 CF.</p> <p>7. Low Speed Traffic Control at \$1475- per -Day for 29 Day(s) = \$42775. Wall is 17ft. high. Removal 6 days Reset 23 days.</p> <p>NOTE: Items 1-4 reflect work to fix existing 2 sections of barrier. Items 5-7 reflect simple estimate to restore collapsed portion of retaining wall.</p> |                        |                      |                     |          |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0024: PINEY BRANCH PARKWAY NORTHWEST

## Barrier Condition Photos



ROCR\_0024\_0.189\_L\_1.jpg

|                                |                                  |   |                  |                                  |      |
|--------------------------------|----------------------------------|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0026-0.004-L                |   |                  |                                  |      |
| <b>Route Name:</b>             | CATHEDRAL AVENUE NORTHWEST       |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/09/2010                       | <b>Barrier Rating:</b>  | 26.50            |                                  |      |
| <b>Barrier Description</b>     |                                  |   |                  |                                  |      |
| <b>Type:</b>                   | W-BEAM STRONG POST               | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | GALVANIZED STEEL                 | <b>Post Material:</b>   | WOOD             |                                  |      |
| <b>Blockout Type:</b>          | STEEL                            | <b>Length (ft.):</b>  | 283              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 25                               | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                           |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |                                  |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                             | <b>Barrier Test Level:</b>  | TL-3             | <b>Is Barrier Crashworthy?:</b>  | YES  |
| <b>Beg. End Trtmt Type:</b>    | NONE                             | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                             | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |                                  |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 27                               | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 74.5 |
| <b>Height (In.):</b>           | 27.7                             | <b>Lateral Offset (In.):</b>  | 17.0             | <b>Road Grade (%):</b>           | 1.80 |
| <b>Physical Condition</b>      |                                  |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>     | No alignment deflection observed. Height is 0-1 in above the 27-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>    | No breaking or cracking observed.   |                  |                                  |      |
|                                | <b>Missing Elements:</b>         | No missing elements observed.   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b> | No corrosion or weathering observed.  |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>     |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>    |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>         |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b> |   |                  |                                  |      |

|                               |                            |                        |     |                     |     |
|-------------------------------|----------------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0026-0.004-L          |                        |     |                     |     |
| <b>Route Name:</b>            | CATHEDRAL AVENUE NORTHWEST |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/09/2010                 | <b>Barrier Rating:</b> |     | 26.50               |     |
| <b>Repair Recommendations</b> |                            |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION                  | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                        |                        |     |                     |     |
| <b>Workorder:</b>             |                            |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0026: CATHEDRAL AVENUE NORTHWEST

## Barrier Condition Photos



ROCR\_0026\_0.004\_L\_1.jpg



|                                |   |  |                 |                                  |       |
|--------------------------------|---|--|-----------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0504ZZ-0.003-R                                   |  |                 |                                  |       |
| <b>Route Name:</b>             | RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET |  |                 |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010  | <b>Barrier Rating:</b>   | 12.60           |                                  |       |
| <b>Barrier Description</b>     |   |  |                 |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT                  | <b>Barrier Function:</b>   | TRAFFIC         |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                               | <b>Post Material:</b>  | WOOD            |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>   | 56              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW   |  |                 |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |                 |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2  | <b>Barrier Test Level:</b>   | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE  | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A             | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED  | <b>Ending End Trtmt Crashworthy?:</b>  | NO              |                                  |       |
| <b>Average Measurements</b>    |   |  |                 |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0             | <b>Post Spacing (In.):</b>       | 120.3 |
| <b>Height (In.):</b>           | 29.2  | <b>Lateral Offset (In.):</b>   | 29.2            | <b>Road Grade (%):</b>           | 0.40  |
| <b>Physical Condition</b>      |   |  |                 |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>                          | No alignment deflection observed. Height ranges from 2 in to 3 in above 27 in design height. |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>                         | No breaking or cracking observed.  |                 |                                  |       |
|                                | <b>Missing Elements:</b>                              | No missing elements observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>                      | No corrosion or weathering observed.   |                 |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>                          | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                     |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>                         | No breaking or cracking observed.  |                 |                                  |       |
|                                | <b>Missing Elements:</b>                              | No missing elements observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>                      | No corrosion or weathering observed.   |                 |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0504ZZ-0.003-R                                   |                        |       |
| <b>Route Name:</b>      | RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET |                        |       |
| <b>Inspection Date:</b> | 11/05/2010  | <b>Barrier Rating:</b> | 12.60 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0504ZZ: RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET

## Barrier Condition Photos



ROCR\_0504ZZ\_0.003\_R\_1.jpg

|                                |   |   |                 |                                  |       |
|--------------------------------|---|---|-----------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0504ZZ-0.063-R                                   |   |                 |                                  |       |
| <b>Route Name:</b>             | RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET |   |                 |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010  | <b>Barrier Rating:</b>  | 12.60           |                                  |       |
| <b>Barrier Description</b>     |   |   |                 |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT                  | <b>Barrier Function:</b>  | TRAFFIC         |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                               | <b>Post Material:</b>   | WOOD            |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>  | 41              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW   |   |                 |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |                 |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2  | <b>Barrier Test Level:</b>  | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED  | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE  | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |       |
| <b>Average Measurements</b>    |   |   |                 |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0             | <b>Post Spacing (In.):</b>       | 119.3 |
| <b>Height (In.):</b>           | 26.7  | <b>Lateral Offset (In.):</b>  | 26.0            | <b>Road Grade (%):</b>           | 0.70  |
| <b>Physical Condition</b>      |   |   |                 |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>                          | No alignment deflection was observed. Height is 0 - 1 in below 27-in design height. |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>                         | No breaking or cracking was observed.   |                 |                                  |       |
|                                | <b>Missing Elements:</b>                              | No missing elements were observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>                      | No corrosion or weathering was observed.  |                 |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>                          | Alignment is acceptable. Height is within 1-in. of 27-in. design height.            |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>                         | No breaking or cracking was observed.   |                 |                                  |       |
|                                | <b>Missing Elements:</b>                              | No missing elements were observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>                      | No corrosion or weathering was observed.  |                 |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0504ZZ-0.063-R                                   |                        |       |
| <b>Route Name:</b>      | RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET |                        |       |
| <b>Inspection Date:</b> | 11/05/2010  | <b>Barrier Rating:</b> | 12.60 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0504ZZ: RAMPS FROM N/B & S/B ROCK CREEK PARKWAY TO "K" STREET

## Barrier Condition Photos



ROCR\_0504ZZ\_0.063\_R\_1.jpg

|                                |   |   |         |                                  |       |
|--------------------------------|---|---|---------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0505-0.004-R                                       |   |         |                                  |       |
| <b>Route Name:</b>             | RAMP FROM S/B ROCK CREEK PARKWAY TO PENNSYLVANIA AVENUE |   |         |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010  | <b>Barrier Rating:</b>  | 9.80    |                                  |       |
| <b>Barrier Description</b>     |   |   |         |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT                    | <b>Barrier Function:</b>  | TRAFFIC |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG                                 | <b>Post Material:</b>   | WOOD    |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>  | 58      |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW   |   |         |                                  |       |
| <b>Barrier Crashworthiness</b> |   |   |         |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2  | <b>Barrier Test Level:</b>  | TL-2    | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE  | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED  | <b>Ending End Trtmt Crashworthy?:</b>   | NO      |                                  |       |
| <b>Average Measurements</b>    |   |   |         |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>   | 0.0     | <b>Post Spacing (In.):</b>       | 119.0 |
| <b>Height (In.):</b>           | 26.7  | <b>Lateral Offset (In.):</b>  | 32.2    | <b>Road Grade (%):</b>           | 2.60  |
| <b>Physical Condition</b>      |   |   |         |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>                            | No alignment deflection observed. Height is 0-1 in below the 27-in design height. |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>                           | No breaking or cracking observed.   |         |                                  |       |
|                                | <b>Missing Elements:</b>                                | No missing elements observed.   |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>                        | No corrosion or weathering observed.  |         |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>                            | Alignment is acceptable. Height is within 1-in. of 27-in. design height.          |         |                                  |       |
|                                | <b>Breaking and Cracking:</b>                           | No breaking or cracking observed.   |         |                                  |       |
|                                | <b>Missing Elements:</b>                                | No missing elements observed.   |         |                                  |       |
|                                | <b>Corrosion and Weathering:</b>                        | No corrosion or weathering observed.  |         |                                  |       |

|                         |   |                        |      |
|-------------------------|---|------------------------|------|
| <b>Barrier ID:</b>      | ROCR-0505-0.004-R                                       |                        |      |
| <b>Route Name:</b>      | RAMP FROM S/B ROCK CREEK PARKWAY TO PENNSYLVANIA AVENUE |                        |      |
| <b>Inspection Date:</b> | 11/05/2010  | <b>Barrier Rating:</b> | 9.80 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

ROUTE 0505: RAMP FROM S/B ROCK CREEK PARKWAY TO PENNSYLVANIA AVENUE

## Barrier Condition Photos



ROCR\_0505\_0.004\_R\_1.jpg

|                                |   |  |                  |                                  |       |
|--------------------------------|---|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0507ZZ-0.002-R   |  |                  |                                  |       |
| <b>Route Name:</b>             | RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010  | <b>Barrier Rating:</b>   | 39.40            |                                  |       |
| <b>Barrier Description</b>     |   |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT  | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG   | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>   | 328              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | MEDIUM  |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2  | <b>Barrier Test Level:</b>   | TL-2             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG FLARED  | <b>Is Beg. End Trtmt Crashworthy?:</b>   | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED  | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |   |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 121.0 |
| <b>Height (In.):</b>           | 27.7  | <b>Lateral Offset (In.):</b>   | 19.2             | <b>Road Grade (%):</b>           | 8.50  |
| <b>Physical Condition</b>      |   |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>  | No alignment deflection observed. Height ranges from 1 in below 27 in design height to 2 in above. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>   | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>  | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>  | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                           |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>   | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>  | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0507ZZ-0.002-R   |                        |       |
| <b>Route Name:</b>      | RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET |                        |       |
| <b>Inspection Date:</b> | 11/08/2010  | <b>Barrier Rating:</b> | 39.40 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

**ROUTE 0507ZZ: RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B  
ROCK CREEK PARKWAY TO "P" STREET**

## Barrier Condition Photos



**ROCR\_0507ZZ\_0.002\_R\_1.jpg**

|                                |   |  |                 |                                  |       |
|--------------------------------|---|--|-----------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0507ZZ-0.008-R   |  |                 |                                  |       |
| <b>Route Name:</b>             | RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET |  |                 |                                  |       |
| <b>Inspection Date:</b>        | 11/05/2010  | <b>Barrier Rating:</b>   | 12.60           |                                  |       |
| <b>Barrier Description</b>     |   |  |                 |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT  | <b>Barrier Function:</b>   | TRAFFIC         |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG   | <b>Post Material:</b>  | WOOD            |                                  |       |
| <b>Blockout Type:</b>          | N/A   | <b>Length (ft.):</b>   | 110             |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35  | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW   |  |                 |                                  |       |
| <b>Barrier Crashworthiness</b> |   |  |                 |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2  | <b>Barrier Test Level:</b>   | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE  | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A             | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED  | <b>Ending End Trtmt Crashworthy?:</b>  | NO              |                                  |       |
| <b>Average Measurements</b>    |   |  |                 |                                  |       |
| <b>Design Height (In.):</b>    | 27  | <b>Width (In.):</b>  | 0.0             | <b>Post Spacing (In.):</b>       | 119.3 |
| <b>Height (In.):</b>           | 28.2  | <b>Lateral Offset (In.):</b>   | 24.0            | <b>Road Grade (%):</b>           | 1.40  |
| <b>Physical Condition</b>      |   |  |                 |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>  | No alignment deflection observed. Height ranges from 0.5 in to 2.0 in above 27 in design height. |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>   | The steel backing on one 10 ft rail is bent.   |                 |                                  |       |
|                                | <b>Missing Elements:</b>  | No missing elements observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                 |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>  | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                         |                 |                                  |       |
|                                | <b>Breaking and Cracking:</b>   | No breaking or cracking observed.  |                 |                                  |       |
|                                | <b>Missing Elements:</b>  | No missing elements observed.  |                 |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                 |                                  |       |

|                         |   |                        |       |
|-------------------------|---|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0507ZZ-0.008-R   |                        |       |
| <b>Route Name:</b>      | RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B ROCK CREEK PARKWAY TO "P" STREET |                        |       |
| <b>Inspection Date:</b> | 11/05/2010  | <b>Barrier Rating:</b> | 12.60 |

### Repair Recommendations

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1898 |
| <b>Brief Workorder:</b> | Replace one 10-foot rail that is bent.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace Rail at \$25- per -Lin. Ft. for 10 LF = \$250.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

**ROUTE 0507ZZ: RAMP FROM "P" STREET TO S/B ROCK CREEK PARKWAY AND RAMP FROM S/B  
ROCK CREEK PARKWAY TO "P" STREET**

**Barrier Condition Photos**



**ROCR\_0507ZZ\_0.008\_R\_1.jpg**

|                                |                                      |   |                 |                                  |      |
|--------------------------------|--------------------------------------|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0509ZZ-0.006-R                  |   |                 |                                  |      |
| <b>Route Name:</b>             | SOUTH WATERSIDE DRIVE N/B & S/B      |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                           | <b>Barrier Rating:</b>  | 24.10           |                                  |      |
| <b>Barrier Description</b>     |                                      |   |                 |                                  |      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD            |                                  |      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 21              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35                                   | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                 |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |                                      |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                 | <b>Barrier Test Level:</b>  | TL-2            | <b>Is Barrier Crashworthy?:</b>  | YES  |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |                                      |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0             | <b>Post Spacing (In.):</b>       | 75.3 |
| <b>Height (In.):</b>           | 30.0                                 | <b>Lateral Offset (In.):</b>  | 30.7            | <b>Road Grade (%):</b>           | 1.40 |
| <b>Physical Condition</b>      |                                      |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection was observed. Height is 1 - 5 in above 27-in design height. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking was observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>             | No missing elements were observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering was observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         |   |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>        |   |                 |                                  |      |
|                                | <b>Missing Elements:</b>             |   |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>     |   |                 |                                  |      |



|                         |                                 |                        |       |
|-------------------------|---------------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0509ZZ-0.006-R             |                        |       |
| <b>Route Name:</b>      | SOUTH WATERSIDE DRIVE N/B & S/B |                        |       |
| <b>Inspection Date:</b> | 11/08/2010                      | <b>Barrier Rating:</b> | 24.10 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B

## Barrier Condition Photos



ROCR\_0509ZZ\_0.006\_R\_1.jpg

|                                |                                  |   |                  |                                  |      |
|--------------------------------|----------------------------------|---|------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0509ZZ-0.012-R              |   |                  |                                  |      |
| <b>Route Name:</b>             | SOUTH WATERSIDE DRIVE N/B & S/B  |   |                  |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                       | <b>Barrier Rating:</b>  | 44.20            |                                  |      |
| <b>Barrier Description</b>     |                                  |   |                  |                                  |      |
| <b>Type:</b>                   | W-BEAM STRONG POST               | <b>Barrier Function:</b>  | TRAFFIC          |                                  |      |
| <b>Barrier Material:</b>       | WEATHERING STEEL/CORTEN          | <b>Post Material:</b>   | CORTEN           |                                  |      |
| <b>Blockout Type:</b>          | WOOD                             | <b>Length (ft.):</b>  | 1227             |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35                               | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                             |   |                  |                                  |      |
| <b>Barrier Crashworthiness</b> |                                  |   |                  |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                             | <b>Barrier Test Level:</b>  | TL-3             | <b>Is Barrier Crashworthy?:</b>  | YES  |
| <b>Beg. End Trtmt Type:</b>    | NONE                             | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A              | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                             | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |      |
| <b>Average Measurements</b>    |                                  |   |                  |                                  |      |
| <b>Design Height (In.):</b>    | 27                               | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 75.5 |
| <b>Height (In.):</b>           | 28.7                             | <b>Lateral Offset (In.):</b>  | 35.2             | <b>Road Grade (%):</b>           | 4.40 |
| <b>Physical Condition</b>      |                                  |   |                  |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>     | Alignment deflection of 6 - 12 in was observed along 80 ft. Height is 0 - 3 in above 27-in design height. |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>    | 3 rails are bent. 1 rail is folded and torn.  |                  |                                  |      |
|                                | <b>Missing Elements:</b>         | 3 blocks and 1 post are missing.  |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b> | No corrosion or weathering was observed.  |                  |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>     |   |                  |                                  |      |
|                                | <b>Breaking and Cracking:</b>    |   |                  |                                  |      |
|                                | <b>Missing Elements:</b>         |   |                  |                                  |      |
|                                | <b>Corrosion and Weathering:</b> |   |                  |                                  |      |

|                         |                                 |                        |       |
|-------------------------|---------------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0509ZZ-0.012-R             |                        |       |
| <b>Route Name:</b>      | SOUTH WATERSIDE DRIVE N/B & S/B |                        |       |
| <b>Inspection Date:</b> | 11/08/2010                      | <b>Barrier Rating:</b> | 44.20 |

### Repair Recommendations

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$4086 |
| <b>Brief Workorder:</b> | Adjust alignment along 80 feet of barrier replace 50 feet of rail 1 post and 3 blocks.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 80 LF = \$800. Adjust alignment along 80 feet of barrier.<br>Replace Rail at \$25- per -Lin. Ft. for 50 LF = \$1250.<br>Replace Block at \$30- per -Each for 3 Block(s) = \$90.<br>Replace Post at \$100- per -Each for 1 Post(s) = \$100.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B

## Barrier Condition Photos



ROCR\_0509ZZ\_0.012\_R\_1.jpg

|                                |                                   |  |                  |                                  |                      |
|--------------------------------|-----------------------------------|--|------------------|----------------------------------|----------------------|
| <b>Barrier ID:</b>             | ROCR-0509ZZ-0.276-L               |  |                  |                                  |                      |
| <b>Route Name:</b>             | SOUTH WATERSIDE DRIVE N/B & S/B   |  |                  |                                  |                      |
| <b>Inspection Date:</b>        | 11/08/2010                        | <b>Barrier Rating:</b>   | 33.70            |                                  |                      |
| <b>Barrier Description</b>     |                                   |  |                  |                                  |                      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITH BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |                      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG           | <b>Post Material:</b>  | WOOD             |                                  |                      |
| <b>Blockout Type:</b>          | WOOD                              | <b>Length (ft.):</b>   | 107              |                                  |                      |
| <b>Speed Limit (MPH):</b>      | 35                                | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |                      |
| <b>Hazard Behind Barrier:</b>  | MEDIUM                            |  |                  |                                  |                      |
| <b>Barrier Crashworthiness</b> |                                   |  |                  |                                  |                      |
| <b>Appropriate Test Level:</b> | TL-2                              | <b>Barrier Test Level:</b>   | TL-3             | <b>Is Barrier Crashworthy?:</b>  | YES                  |
| <b>Beg. End Trtmt Type:</b>    | SBT/LOG BURIED                    | <b>Is Beg. End Trtmt Crashworthy?:</b>   | YES              | <b>Approach Transition Type:</b> | RIGID SBT WALL - SBT |
| <b>Ending End Trtmt Type:</b>  | NONE                              | <b>Ending End Trtmt Crashworthy?:</b>  | N/A              |                                  |                      |
| <b>Average Measurements</b>    |                                   |  |                  |                                  |                      |
| <b>Design Height (In.):</b>    | 27                                | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 118.3                |
| <b>Height (In.):</b>           | 25.7                              | <b>Lateral Offset (In.):</b>   | 81.0             | <b>Road Grade (%):</b>           | 4.30                 |
| <b>Physical Condition</b>      |                                   |  |                  |                                  |                      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>      | Alignment deflects 6 in to 12 in for 20 ft. Height ranges from 1 in to 3 in below 27 in design height for 20ft. and 0 in to 1 in below for 87ft. |                  |                                  |                      |
|                                | <b>Breaking and Cracking:</b>     | Two rails have been impacted and cracked. Steel backing also bent. 3 posts are broken.   |                  |                                  |                      |
|                                | <b>Missing Elements:</b>          | No missing elements observed.  |                  |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |                      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>      | Alignment is acceptable. Height is within 1-in. of 27-in. design height.   |                  |                                  |                      |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.  |                  |                                  |                      |
|                                | <b>Missing Elements:</b>          | No missing elements observed.  |                  |                                  |                      |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |                      |

|                         |                                 |                        |       |
|-------------------------|---------------------------------|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0509ZZ-0.276-L             |                        |       |
| <b>Route Name:</b>      | SOUTH WATERSIDE DRIVE N/B & S/B |                        |       |
| <b>Inspection Date:</b> | 11/08/2010                      | <b>Barrier Rating:</b> | 33.70 |

### Repair Recommendations

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2502 |
| <b>Brief Workorder:</b> | Replace two rails and three posts.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Replace Rail at \$25- per -Lin. Ft. for 20 LF = \$500.<br>Replace Post at \$100- per -Each for 3 Post(s) = \$300.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B

## Barrier Condition Photos



ROCR\_0509ZZ\_0.276\_L\_1.jpg



|                                |  |  |                 |                                  |      |
|--------------------------------|--|--|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0509ZZ-0.286-R                      |  |                 |                                  |      |
| <b>Route Name:</b>             | SOUTH WATERSIDE DRIVE N/B & S/B          |  |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>   | 32.90           |                                  |      |
| <b>Barrier Description</b>     |  |  |                 |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>   | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>  | N/A             |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>   | 31              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35                                       | <b>Placement with Respect to Road:</b>   | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | EXTREME                                  |  |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |  |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                     | <b>Barrier Test Level:</b>   | NCW             | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>  | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |  |                 |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>  | 23.0            | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 42.0                                     | <b>Lateral Offset (In.):</b>   | 87.6            | <b>Road Grade (%):</b>           | 3.40 |
| <b>Physical Condition</b>      |  |  |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height ranges from 42 in to 44 in. Assumed design height is 44 in based on field observations. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.   |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |  |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |  |                 |                                  |      |
|                                | <b>Missing Elements:</b>                 |  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |  |                 |                                  |      |

|                               |                                 |                        |     |                     |     |
|-------------------------------|---------------------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0509ZZ-0.286-R             |                        |     |                     |     |
| <b>Route Name:</b>            | SOUTH WATERSIDE DRIVE N/B & S/B |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/08/2010                      | <b>Barrier Rating:</b> |     | 32.90               |     |
| <b>Repair Recommendations</b> |                                 |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION                       | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                             |                        |     |                     |     |
| <b>Workorder:</b>             |                                 |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B

## Barrier Condition Photos



ROCR\_0509ZZ\_0.286\_R\_1.jpg

|                                |  |   |         |                                  |      |
|--------------------------------|--|---|---------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0509ZZ-0.308-R                      |   |         |                                  |      |
| <b>Route Name:</b>             | SOUTH WATERSIDE DRIVE N/B & S/B          |   |         |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010                               | <b>Barrier Rating:</b>  | 24.00   |                                  |      |
| <b>Barrier Description</b>     |  |   |         |                                  |      |
| <b>Type:</b>                   | STONE MASONRY WITHOUT CONCRETE CORE WALL | <b>Barrier Function:</b>  | TRAFFIC |                                  |      |
| <b>Barrier Material:</b>       | STONE                                    | <b>Post Material:</b>   | N/A     |                                  |      |
| <b>Blockout Type:</b>          | N/A                                      | <b>Length (ft.):</b>  | 20      |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35                                       | <b>Placement with Respect to Road:</b>  | TANGENT |                                  |      |
| <b>Hazard Behind Barrier:</b>  | HIGH                                     |   |         |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |         |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2                                     | <b>Barrier Test Level:</b>  | NCW     | <b>Is Barrier Crashworthy?:</b>  | NO   |
| <b>Beg. End Trtmt Type:</b>    | NONE                                     | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A     | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                     | <b>Ending End Trtmt Crashworthy?:</b>   | N/A     |                                  |      |
| <b>Average Measurements</b>    |  |   |         |                                  |      |
| <b>Design Height (In.):</b>    | 24                                       | <b>Width (In.):</b>   | 24.0    | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 42.0                                     | <b>Lateral Offset (In.):</b>  | 122.6   | <b>Road Grade (%):</b>           | 2.60 |
| <b>Physical Condition</b>      |  |   |         |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>             | No alignment deflection observed. Height is 0-3 in above the 44-in design height. |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            | No breaking or cracking observed.   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 | No missing elements observed.   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         | No corrosion or weathering observed.  |         |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>             |   |         |                                  |      |
|                                | <b>Breaking and Cracking:</b>            |   |         |                                  |      |
|                                | <b>Missing Elements:</b>                 |   |         |                                  |      |
|                                | <b>Corrosion and Weathering:</b>         |   |         |                                  |      |

|                               |                                 |                        |     |                     |     |
|-------------------------------|---------------------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0509ZZ-0.308-R             |                        |     |                     |     |
| <b>Route Name:</b>            | SOUTH WATERSIDE DRIVE N/B & S/B |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/08/2010                      | <b>Barrier Rating:</b> |     | 24.00               |     |
| <b>Repair Recommendations</b> |                                 |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION                       | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                             |                        |     |                     |     |
| <b>Workorder:</b>             |                                 |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B

## Barrier Condition Photos



ROCR\_0509ZZ\_0.308\_R\_1.jpg

|                                |                                   |  |                  |                                  |       |
|--------------------------------|-----------------------------------|--|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0509ZZ-0.311-R               |  |                  |                                  |       |
| <b>Route Name:</b>             | SOUTH WATERSIDE DRIVE N/B & S/B   |  |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010                        | <b>Barrier Rating:</b>   | 35.50            |                                  |       |
| <b>Barrier Description</b>     |                                   |  |                  |                                  |       |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITH BLOCKOUT | <b>Barrier Function:</b>   | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG           | <b>Post Material:</b>  | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | WOOD                              | <b>Length (ft.):</b>   | 245              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35                                | <b>Placement with Respect to Road:</b>   | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | HIGH                              |  |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |                                   |  |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2                              | <b>Barrier Test Level:</b>   | TL-3             | <b>Is Barrier Crashworthy?:</b>  | YES   |
| <b>Beg. End Trtmt Type:</b>    | NONE                              | <b>Is Beg. End Trtmt Crashworthy?:</b>   | N/A              | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | SBT/LOG FLARED                    | <b>Ending End Trtmt Crashworthy?:</b>  | NO               |                                  |       |
| <b>Average Measurements</b>    |                                   |  |                  |                                  |       |
| <b>Design Height (In.):</b>    | 27                                | <b>Width (In.):</b>  | 0.0              | <b>Post Spacing (In.):</b>       | 118.3 |
| <b>Height (In.):</b>           | 27.0                              | <b>Lateral Offset (In.):</b>   | 74.6             | <b>Road Grade (%):</b>           | 6.10  |
| <b>Physical Condition</b>      |                                   |  |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>      | No alignment deflection observed. Height ranges from 1-in below to 1-in above the 27-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>          | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>      | Alignment is acceptable. Height is within 1-in. of 27-in. design height.                               |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>     | No breaking or cracking observed.  |                  |                                  |       |
|                                | <b>Missing Elements:</b>          | No missing elements observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>  | No corrosion or weathering observed.   |                  |                                  |       |

|                               |                                 |                        |     |                     |     |
|-------------------------------|---------------------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0509ZZ-0.311-R             |                        |     |                     |     |
| <b>Route Name:</b>            | SOUTH WATERSIDE DRIVE N/B & S/B |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/08/2010                      | <b>Barrier Rating:</b> |     | 35.50               |     |
| <b>Repair Recommendations</b> |                                 |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION                       | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                             |                        |     |                     |     |
| <b>Workorder:</b>             |                                 |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.



# Rock Creek Park

ROUTE 0509ZZ: SOUTH WATERSIDE DRIVE N/B & S/B

## Barrier Condition Photos



ROCR\_0509ZZ\_0.311\_R\_1.jpg

|                                |  |   |                  |                                  |       |
|--------------------------------|--|---|------------------|----------------------------------|-------|
| <b>Barrier ID:</b>             | ROCR-0511ZZ-0.049-R  |   |                  |                                  |       |
| <b>Route Name:</b>             | RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE NW TO MILITARY ROAD NW |   |                  |                                  |       |
| <b>Inspection Date:</b>        | 11/08/2010   | <b>Barrier Rating:</b>  | 28.50            |                                  |       |
| <b>Barrier Description</b>     |  |   |                  |                                  |       |
| <b>Type:</b>                   | OTHER: TIMBER RAIL ON TIMBER POSTS   | <b>Barrier Function:</b>  | TRAFFIC          |                                  |       |
| <b>Barrier Material:</b>       | LOG/TIMBER/WOOD  | <b>Post Material:</b>   | WOOD             |                                  |       |
| <b>Blockout Type:</b>          | N/A  | <b>Length (ft.):</b>  | 269              |                                  |       |
| <b>Speed Limit (MPH):</b>      | 35   | <b>Placement with Respect to Road:</b>  | OUTSIDE OF CURVE |                                  |       |
| <b>Hazard Behind Barrier:</b>  | LOW  |   |                  |                                  |       |
| <b>Barrier Crashworthiness</b> |  |   |                  |                                  |       |
| <b>Appropriate Test Level:</b> | TL-2   | <b>Barrier Test Level:</b>  | NCW              | <b>Is Barrier Crashworthy?:</b>  | NO    |
| <b>Beg. End Trtmt Type:</b>    | OTHER: TIMBER FLARED   | <b>Is Beg. End Trtmt Crashworthy?:</b>  | NO               | <b>Approach Transition Type:</b> | NONE  |
| <b>Ending End Trtmt Type:</b>  | NONE   | <b>Ending End Trtmt Crashworthy?:</b>   | N/A              |                                  |       |
| <b>Average Measurements</b>    |  |   |                  |                                  |       |
| <b>Design Height (In.):</b>    | 20   | <b>Width (In.):</b>   | 0.0              | <b>Post Spacing (In.):</b>       | 120.6 |
| <b>Height (In.):</b>           | 18.7   | <b>Lateral Offset (In.):</b>  | 62.2             | <b>Road Grade (%):</b>           | 1.20  |
| <b>Physical Condition</b>      |  |   |                  |                                  |       |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>   | No alignment deflection was observed. 70 ft of barrier is 1-4 in below 20-in design height. |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>  | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>   | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>   | 2 posts are rotten with less than 50 percent of cross section remaining.                    |                  |                                  |       |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>   | Alignment is acceptable. Height is within 1-in. of 20-in. design height.                    |                  |                                  |       |
|                                | <b>Breaking and Cracking:</b>  | No breaking or cracking was observed.   |                  |                                  |       |
|                                | <b>Missing Elements:</b>   | No missing elements were observed.  |                  |                                  |       |
|                                | <b>Corrosion and Weathering:</b>   | No corrosion or weathering was observed.  |                  |                                  |       |

|                         |  |                        |       |
|-------------------------|--|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0511ZZ-0.049-R  |                        |       |
| <b>Route Name:</b>      | RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE NW TO MILITARY ROAD NW |                        |       |
| <b>Inspection Date:</b> | 11/08/2010   | <b>Barrier Rating:</b> | 28.50 |

### Repair Recommendations

|                         |  |                        |                      |                     |        |
|-------------------------|--|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR   | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$2612 |
| <b>Brief Workorder:</b> | Raise 70 feet of guardrail to 20-inch design height. Replace 2 posts.  |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 70 LF = \$700. Raise 70 feet of guardrail to 20-inch design height.<br>Replace Post at \$100- per -Each for 2 Post(s) = \$200. Replace 2 rotten posts.<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

**2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.**

# Rock Creek Park

ROUTE 0511ZZ: RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE ROAD NW TO MILITARY ROAD NW

## Barrier Condition Photos



ROCR\_0511ZZ\_0.049\_R\_1.jpg

|                                |  |   |                 |                                  |      |
|--------------------------------|--|---|-----------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0511ZZ-0.184-R  |   |                 |                                  |      |
| <b>Route Name:</b>             | RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE NW TO MILITARY ROAD NW |   |                 |                                  |      |
| <b>Inspection Date:</b>        | 11/08/2010   | <b>Barrier Rating:</b>  | 18.60           |                                  |      |
| <b>Barrier Description</b>     |  |   |                 |                                  |      |
| <b>Type:</b>                   | W-BEAM STRONG POST   | <b>Barrier Function:</b>  | TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | GALVANIZED STEEL   | <b>Post Material:</b>   | WOOD            |                                  |      |
| <b>Blockout Type:</b>          | WOOD   | <b>Length (ft.):</b>  | 29              |                                  |      |
| <b>Speed Limit (MPH):</b>      | 35   | <b>Placement with Respect to Road:</b>  | INSIDE OF CURVE |                                  |      |
| <b>Hazard Behind Barrier:</b>  | LOW  |   |                 |                                  |      |
| <b>Barrier Crashworthiness</b> |  |   |                 |                                  |      |
| <b>Appropriate Test Level:</b> | TL-2   | <b>Barrier Test Level:</b>  | TL-3            | <b>Is Barrier Crashworthy?:</b>  | YES  |
| <b>Beg. End Trtmt Type:</b>    | W-BEAM TANGENT 350   | <b>Is Beg. End Trtmt Crashworthy?:</b>  | YES             | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE   | <b>Ending End Trtmt Crashworthy?:</b>   | N/A             |                                  |      |
| <b>Average Measurements</b>    |  |   |                 |                                  |      |
| <b>Design Height (In.):</b>    | 27   | <b>Width (In.):</b>   | 0.0             | <b>Post Spacing (In.):</b>       | 70.0 |
| <b>Height (In.):</b>           | 23.0   | <b>Lateral Offset (In.):</b>  | 54.0            | <b>Road Grade (%):</b>           | 5.20 |
| <b>Physical Condition</b>      |  |   |                 |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>   | No alignment deflection was observed. Barrier height is 3 - 6 in below 27-in design height.                     |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>  | No breaking or cracking was observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>   | No missing elements were observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>   | No corrosion or weathering was observed.  |                 |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>   | No alignment deflection was observed. Height is 3 - 6 in below 27-in design height. Steel strut is below grade. |                 |                                  |      |
|                                | <b>Breaking and Cracking:</b>  | No breaking or cracking was observed.   |                 |                                  |      |
|                                | <b>Missing Elements:</b>   | No missing elements were observed.  |                 |                                  |      |
|                                | <b>Corrosion and Weathering:</b>   | No corrosion or weathering was observed.  |                 |                                  |      |

|                         |  |                        |       |
|-------------------------|--|------------------------|-------|
| <b>Barrier ID:</b>      | ROCR-0511ZZ-0.184-R  |                        |       |
| <b>Route Name:</b>      | RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE NW TO MILITARY ROAD NW |                        |       |
| <b>Inspection Date:</b> | 11/08/2010   | <b>Barrier Rating:</b> | 18.60 |

### Repair Recommendations

|                         |   |                        |                      |                     |        |
|-------------------------|---|------------------------|----------------------|---------------------|--------|
| <b>Repair Action:</b>   | REPAIR  | <b>FMSS Work Type:</b> | DEFERRED MAINTENANCE | <b>Repair Cost:</b> | \$1942 |
| <b>Brief Workorder:</b> | Raise 29 feet of guardrail up to 27-inch design height.   |                        |                      |                     |        |
| <b>Workorder:</b>       | Adjust Guardrail at \$10- per -Lin. Ft. for 29 LF = \$290. Raise 29ft. of guardrail up to 27-inch design height<br>Low Speed Traffic Control at \$1475- per -Day for 1 Day(s) = \$1475. |                        |                      |                     |        |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

# Rock Creek Park

ROUTE 0511ZZ: RAMP FROM N/B JOYCE ROAD NW TO 17TH STREET NW AND RAMP FROM S/B JOYCE ROAD NW TO MILITARY ROAD NW

## Barrier Condition Photos



ROCR\_0511ZZ\_0.184\_R\_1.jpg

|                                |                                      |   |                     |                                  |      |
|--------------------------------|--------------------------------------|---|---------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0927-0.000-P1                   |   |                     |                                  |      |
| <b>Route Name:</b>             | PICNIC GROVE #20 PARKING             |   |                     |                                  |      |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 8.60                |                                  |      |
| <b>Barrier Description</b>     |                                      |   |                     |                                  |      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | NON-TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD                |                                  |      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 15                  |                                  |      |
| <b>Speed Limit (MPH):</b>      | 15                                   | <b>Placement with Respect to Road:</b>                                      | NON-TRAFFIC BARRIER |                                  |      |
| <b>Hazard Behind Barrier:</b>  | N/A                                  |   |                     |                                  |      |
| <b>Barrier Crashworthiness</b> |                                      |   |                     |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | N/A                 | <b>Is Barrier Crashworthy?:</b>  | N/A  |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>                                      | N/A                 | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>                                       | N/A                 |                                  |      |
| <b>Average Measurements</b>    |                                      |   |                     |                                  |      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0                 | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 30.0                                 | <b>Lateral Offset (In.):</b>  | 0.0                 | <b>Road Grade (%):</b>           | 0.00 |
| <b>Physical Condition</b>      |                                      |   |                     |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height is 3 in above 27 in design height. |                     |                                  |      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                     |                                  |      |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                     |                                  |      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                     |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         |   |                     |                                  |      |
|                                | <b>Breaking and Cracking:</b>        |   |                     |                                  |      |
|                                | <b>Missing Elements:</b>             |   |                     |                                  |      |
|                                | <b>Corrosion and Weathering:</b>     |   |                     |                                  |      |



|                         |                          |                        |      |
|-------------------------|--------------------------|------------------------|------|
| <b>Barrier ID:</b>      | ROCR-0927-0.000-P1       |                        |      |
| <b>Route Name:</b>      | PICNIC GROVE #20 PARKING |                        |      |
| <b>Inspection Date:</b> | 11/03/2010               | <b>Barrier Rating:</b> | 8.60 |

**Repair Recommendations**

|                         |           |                        |     |                     |     |
|-------------------------|-----------|------------------------|-----|---------------------|-----|
| <b>Repair Action:</b>   | NO ACTION | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b> | N/A       |                        |     |                     |     |
| <b>Workorder:</b>       |           |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0927: PICNIC GROVE #20 PARKING**

**Barrier Condition Photos**



**ROCR\_0927\_0.000\_P1\_1.jpg**

|                                |                                      |   |                     |                                  |      |
|--------------------------------|--------------------------------------|---|---------------------|----------------------------------|------|
| <b>Barrier ID:</b>             | ROCR-0929-0.000-P1                   |   |                     |                                  |      |
| <b>Route Name:</b>             | PICNIC GROVE #21 PARKING             |   |                     |                                  |      |
| <b>Inspection Date:</b>        | 11/03/2010                           | <b>Barrier Rating:</b>  | 0.00                |                                  |      |
| <b>Barrier Description</b>     |                                      |   |                     |                                  |      |
| <b>Type:</b>                   | STEEL-BACKED TIMBER WITHOUT BLOCKOUT | <b>Barrier Function:</b>  | NON-TRAFFIC         |                                  |      |
| <b>Barrier Material:</b>       | STEEL-BACKED TIMBER/LOG              | <b>Post Material:</b>   | WOOD                |                                  |      |
| <b>Blockout Type:</b>          | N/A                                  | <b>Length (ft.):</b>  | 17                  |                                  |      |
| <b>Speed Limit (MPH):</b>      | 15                                   | <b>Placement with Respect to Road:</b>  | NON-TRAFFIC BARRIER |                                  |      |
| <b>Hazard Behind Barrier:</b>  | N/A                                  |   |                     |                                  |      |
| <b>Barrier Crashworthiness</b> |                                      |   |                     |                                  |      |
| <b>Appropriate Test Level:</b> | TL-1                                 | <b>Barrier Test Level:</b>  | N/A                 | <b>Is Barrier Crashworthy?:</b>  | N/A  |
| <b>Beg. End Trtmt Type:</b>    | NONE                                 | <b>Is Beg. End Trtmt Crashworthy?:</b>  | N/A                 | <b>Approach Transition Type:</b> | NONE |
| <b>Ending End Trtmt Type:</b>  | NONE                                 | <b>Ending End Trtmt Crashworthy?:</b>   | N/A                 |                                  |      |
| <b>Average Measurements</b>    |                                      |   |                     |                                  |      |
| <b>Design Height (In.):</b>    | 27                                   | <b>Width (In.):</b>   | 0.0                 | <b>Post Spacing (In.):</b>       | 0.0  |
| <b>Height (In.):</b>           | 26.2                                 | <b>Lateral Offset (In.):</b>  | 0.0                 | <b>Road Grade (%):</b>           | 0.00 |
| <b>Physical Condition</b>      |                                      |   |                     |                                  |      |
| <b>Barrier</b>                 | <b>Alignment and Height:</b>         | No alignment deflection observed. Height is 1-in or less below the 27-in design height. |                     |                                  |      |
|                                | <b>Breaking and Cracking:</b>        | No breaking or cracking observed.   |                     |                                  |      |
|                                | <b>Missing Elements:</b>             | No missing elements observed.   |                     |                                  |      |
|                                | <b>Corrosion and Weathering:</b>     | No corrosion or weathering observed.  |                     |                                  |      |
| <b>End Treatments</b>          | <b>Alignment and Height:</b>         |   |                     |                                  |      |
|                                | <b>Breaking and Cracking:</b>        |   |                     |                                  |      |
|                                | <b>Missing Elements:</b>             |   |                     |                                  |      |
|                                | <b>Corrosion and Weathering:</b>     |   |                     |                                  |      |

|                               |                          |                        |     |                     |     |
|-------------------------------|--------------------------|------------------------|-----|---------------------|-----|
| <b>Barrier ID:</b>            | ROCR-0929-0.000-P1       |                        |     |                     |     |
| <b>Route Name:</b>            | PICNIC GROVE #21 PARKING |                        |     |                     |     |
| <b>Inspection Date:</b>       | 11/03/2010               | <b>Barrier Rating:</b> |     | 0.00                |     |
| <b>Repair Recommendations</b> |                          |                        |     |                     |     |
| <b>Repair Action:</b>         | NO ACTION                | <b>FMSS Work Type:</b> | N/A | <b>Repair Cost:</b> | \$0 |
| <b>Brief Workorder:</b>       | N/A                      |                        |     |                     |     |
| <b>Workorder:</b>             |                          |                        |     |                     |     |

2008 cost estimate (ASTM Class D), preliminary for comparison to other repair costs only.

**Rock Creek Park**  
**ROUTE 0929: PICNIC GROVE #21 PARKING**

**Barrier Condition Photos**



**ROCR\_0929\_0.000\_P1\_1.jpg**

# Appendix A

## Summary of GIP Definitions and Assessment



Rock Creek Park



**Federal Lands Highway  
Road Inventory Program**

# Appendix A:

## Guardwall/Rail Inventory Program (GIP)

### EXPLANATION OF REPORT TERMS

The Guardwall/rail Inventory Program (GIP) was commissioned by WASO to identify deferred maintenance related to barriers in National Parks that have more than one mile of guardwall or guardrail. GIP was designed jointly by the NPS and FHWA and the inventory process records both static characteristics of the barrier (e.g., length, height, etc.) as well as dynamic information about the condition of the barrier.

Barriers that traverse bridges are not included in this inventory, these barriers are covered in FHWA's Bridge Inventory Program (BIP); however, barriers that are approaches to bridges were part of this inventory.

The following discussion highlights each of the elements found in the reports.

#### Static Barrier Characteristics

##### **BARRIER TYPE**

Refers to both the design and the construction materials used:

- W-Beam, Strong Post
- W-Beam, Weak Post
- Thrie Beam/Modified Thrie Beam
- Box Beam
- Steel-Backed Timber, w/ Blockout
- Steel-Backed Timber, w/o Blockout
- Steel-Backed Log Rail
- High Tension Cable
- Three-Strand Cable
- Stone Masonry, w/o Concrete Core Wall
- Stone Masonry, w/ Concrete Core Wall
- Random Rubble Cavity Wall
- Concrete Barrier
- Concrete, with Simulated Stone Face
- W-Beam (Double Face), Strong Post
- Steel-Backed Timber (Double Face)
- Other: *Completed by field crew*

##### **BARRIER MATERIAL**

The type of material of which the barrier is composed:

- Cable
- Concrete
- Galvanized Steel
- Log/Timber/Wood
- Steel-Backed Timber/Log
- Weathering Steel/Corten
- Stone
- Other: *Completed by field crew*

##### **LENGTH**

The longitudinal distance between the beginning and end of the barrier. It should include the length of end treatments in the overall length of the barrier. For roadside barriers, this can be calculated from the start and end locations.

## **BARRIER FUNCTION: Traffic or Non-Traffic Barrier.**

Due to the different GIP assessment criteria of barriers based on their intended use, barriers were classified as being either traffic barriers or non-traffic barriers.

*Traffic barriers* are physical devices intended to keep vehicles or people from straying into dangerous or off-limits areas. For the purpose of this inventory and assessment, a traffic barrier is categorized as roadside hardware placed longitudinally, excluding pedestrian railing and fencing.

*Non-traffic barriers* provide a physical delineation between public access areas and restricted or protected areas in locations such as a parking lot, viewpoint or turnout. Non-traffic barriers which inhibit access of vehicles are included in this report; non-traffic barriers which only inhibit access of pedestrians or bicyclists are not included. For the purpose of this inventory, non-traffic barriers are guidewalls and guiderails. Note: rocks, stones, boulders, fences or curbs were excluded from this inventory.

There are instances in parks where a single barrier can switch between being classified as a traffic barrier and a non-traffic barrier. Such instances typically occur at pullouts, where a traffic barrier along the road will continue through the pullout without interruption. In such instances, the traffic barrier and non-traffic barrier were assessed using different criteria. Due to the different criteria, the GIP database was designed to record the traffic barrier and non-traffic barrier as two distinct barriers, even though to the eye, they appear as one barrier. Other instances where a single barrier is split into multiple barriers would be when the barrier is placed continuously along two legs of an intersection, so that one portion of the barrier may be on one road and the remaining portion of the barrier is on a different road.

## **POST MATERIAL**

The type or material that the barrier's supporting posts are made of:

- Galvanized Steel
- Wood
- Corten
- Other: *Completed by field crew*
- N/A

## **BLOCKOUT TYPE**

The type of blockout or of what it is comprised:

- Wood
- Plastic
- Steel
- N/A

## **BARRIER PLACEMENT WITH RESPECT TO ROADWAY**

To identify the roadway alignment the barrier is located upon:

- Tangent
- Inside of Curve
- Both Inside and Outside of Curve
- Outside of Curve

## **POSTED SPEED LIMIT**

The posted speed limit of the roadway section.



## HAZARD BEHIND BARRIER

A qualitative description of the severity of the hazard behind the barrier:

- Low
- Medium
- High
- Extreme

## APPROPRIATE TEST LEVEL (TL) FOR ROAD

Based on the posted speed limit, the NCHRP 350 Crashworthiness test level appropriate for the roadway.

- TL-1, 30 mph and lower
- TL-2, 35-45 mph
- TL-3, 50 mph and higher

## BARRIER TEST LEVEL (TL)

A traffic barrier is crashworthy if it was successfully crash tested under *NCHRP Report 350* at speeds along the park road or parkway or if it was accepted through analysis by FHWA, based on similarity to other crashworthy critical design element features. Non-traffic barriers are classified at N/A.

- TL-1
- TL-2
- TL-3
- No
- N/A – Non-Traffic Barrier

## IS BARRIER CRASHWORTHY

This compared the appropriate crashworthy test level required for the posted speed limit to the barrier's test level.

- Yes
- No

## BEGINNING END TREATMENT TYPE

An end treatment is safety hardware that mitigates impacts to the ends of a barrier. Most common end treatments are for w-beam systems. Note that stonemasonry barriers typically do not have end treatments.

The beginning end treatment is based on the travel lane closest to the barrier. A vehicle traveling in the lane closest to the barrier will encounter the barrier's beginning end treatment first. It is not based on the RIP primary direction. Identifies the barrier's beginning end treatment type:

- W-Beam Flared 350 Compliant
- W-Beam Tangent 350 Complaint
- W-Beam Buried End
- W-Beam Trailing End/CRG
- W-Beam BCT, Flared
- W-Beam, Turn Down
- SBT/Log, Flared
- SBT/Log, Buried
- Median Treatments
- Box Beam
- Cable
- Crash Cushions/Attenuator
- Other: *Completed by field crew*
- None

### **IS BEGINNING END TREATMENT CRASHWORTHY**

Identifies if the barrier's beginning end treatment (based on direction of travel for the travel lane closest to barrier) is crashworthy, based on NCHRP-350.

- Yes
- No
- N/A

### **APPROACH TRANSITION TYPE**

A transition is safety hardware designed to be placed between two different types of barrier. Most common transition types are between bridge rail and w-beam systems.

This identifies the barrier's transition type:

- Bridge Rail, W-Beam
- Bridge Rail, SBT
- Rigid W-Beam, W-Beam
- Rigid SBT (Wall), SBT
- Concrete/Masonry, W-Beam
- Concrete/Masonry, SBT
- Concrete/Masonry, Thrie Beam
- Other: *Completed by field crew*
- None

### **ENDING END TREATMENT TYPE**

The ending end treatment is based on the travel lane closest to the barrier. A vehicle traveling in the lane closest to the barrier will encounter the barrier's ending end treatment last, after passing the rest of the barrier. It is not based on the RIP primary direction. Identifies the barrier's ending end treatment type:

- W-Beam Flared 350 Compliant
- W-Beam Tangent 350 Complaint
- W-Beam Buried End
- W-Beam Trailing End/CRG
- W-Beam BCT, Flared
- W-Beam, Turn Down
- SBT/Log, Flared
- SBT/Log, Buried
- Median Treatments
- Box Beam
- Cable
- Crash Cushions/Attenuator
- Other: *Completed by field crew*
- None

### **IS ENDING END TREATMENT CRASHWORTHY**

Identifies if the barrier's ending end treatment (based on direction of travel for the travel lane closest to barrier) is crashworthy, based on NCHRP-350.

- Yes
- No
- N/A

### **BARRIER DESIGN HEIGHT**

Identifies the barrier's original "as-built" design height:

- 27-in, W-beam, Steel-Backed Timber, Stone Masonry w/ Concrete Core Wall
- 24-in, Stone Masonry w/o Concrete Core Wall, Log on Log
- 20-in, Timber on Wood Posts, Timber on Concrete Posts, Timber on Granite Posts
- 18/24-in, Crenellated Stone Masonry Barrier
- 18/24-in, Dry Stack Stone Wall
- 31-in, Steel-Backed Log
- 32-in, Jersey Barrier

### **AVERAGE MEASUREMENTS**

Minimum of three measurements taken on each barrier.

First measurement approximately 50-ft from the beginning of the barrier, measured from the extreme ends of the barrier's end treatment/transition. Do not take a measurement along the end treatment  
Measure and record measurement every 200-ft thereafter for the run of barrier

Last measurement approximately 50-ft from the end of the barrier. Do not take a measurement along the end treatment

If a barrier is less than 300-ft, even say 45-ft, a minimum of three measurements were still taken.

### **AVERAGE WIDTH**

The width of the barrier. Only recorded for guardwalls; not guardrail.

### **AVERAGE POST SPACING**

The spacing of the barrier's (not the end treatments') posts. Only recorded for guardrails; not guardwalls or non-traffic barriers.

### **AVERAGE BARRIER HEIGHT**

The average barrier height. If the barrier has crenellations, the height is measured in the non-crenellated sections of the barrier. If the average lateral offset is less than or equal to 4-ft, average barrier height is measured from the roadway; if the average lateral offset is greater than 4-ft, average barrier height is measured at the barrier face.

### **AVERAGE LATERAL OFFSET**

Determine the average distance between the barrier and the edge of roadway. If a white edgeline is present on the roadway, average lateral offset is measured from the outside edge of the white line to the barrier face. If no white edgeline is present, average lateral offset is measured from the edge of pavement to the barrier face.

### **AVERAGE ROAD GRADE and UPHILL OR DOWNHILL**

Determine an average roadway grade at each barrier location, based on the direction of travel in the lane closest to the barrier.

## **DYNAMIC BARRIER CHARACTERISTICS – CONDITION ASSESSMENT NARRATIVES**

Field crews were directed to write a narrative of the barrier's physical condition. To keep consistency between field crews, all narratives were based on severity and distress criteria, which were developed jointly by the NPS and FHWA. Condition assessments were based on barrier type and can be found directly after this description of report elements.

### **BARRIER ALIGNMENT/HEIGHT**

Narrative completed by field crew describing the barrier's alignment and height. Height comments are based on the barrier's original "as-built" design height.

### **BARRIER BREAKING/CRACKING**

Narrative completed by field crew describing any barrier breaking or cracking found during the inspection.

### **BARRIER MISSING ELEMENTS**

Narrative completed by field crew describing any barrier missing elements encountered during the inspection.

### **BARRIER CORROSION/WEATHERING**

Narrative completed by field crew describing and corrosion or weathering issues associated with the barrier.

### **END TREATMENTS ALIGNMENT/HEIGHT**

Narrative completed by field crew describing the barrier end treatment's alignment and height, when present. Height comments are based on the end treatment's original "as-built" design height.

### **END TREATMENTS BREAKING/CRACKING**

Narrative completed by field crew describing any barrier end treatment's breaking or cracking found during the inspection.

### **END TREATMENTS MISSING ELEMENTS**

Narrative completed by field crew describing any barrier end treatment missing elements encountered during the inspection.

### **END TREATMENTS CORROSION/WEATHERING**

Narrative completed by field crew describing and corrosion or weathering issues associated with the barrier's end treatments.

### **BARRIER PHOTOGRAPHS**

During the inspection, the field crews photographed the beginning end (based on the closest lane's direction of travel) of each barrier. Additional photographs were taken of any unusual deficiencies encountered. Up to two photographs of the barrier are included in this report.

## CONDITION AND SEVERITY DISTRESS TABLES

Due to the extreme number of possible conditions of the barrier, transition and end treatment, the following descriptions and matrices are guidelines created to help classify the condition of the element. While the distinction between good and fair is needed, the distinction between fair and poor is much more important since this is the threshold that defines if the element is slightly compromised or is not functional.

In all likelihood, according to these guidelines different portions of an element (most likely a barrier) may be classified differently; however, a single classification will need to be provided for the element. The survey team will use their professional judgment to determine this single classification. The single classification of each element should be considered an index value that provides a general indicator of overall performance, but not necessarily indicate that a specific treatment is warranted. The specific work order that is prepared based on the observed deficiencies will be a much more definitive indicator of the appropriate treatment based on existing distresses. The overall condition will be used as part of the risk assessment tool to evaluate the risk to driver safety associated with the physical condition of the barrier.

### GOOD

The barrier performs as intended. The barrier is in fairly straight alignment but may have some small amount that is slightly out of alignment. While the height of the barrier may vary over its run, the height is relatively consistent and is close to its original “as-built” design height. Minor cracks may be visually observed on some the posts, though these cracks are neither long nor deep and the only hardware missing are isolated nuts and bolts. Minor surface corrosion on small portions of the surface is visible but there is no decay associated with connections.

The end treatment performs as intended. The end treatment is in good alignment and tension is acceptable. While the end treatment may exhibit some dents, there are no cracked rails, posts, blocks or any missing elements. Corrosion and erosion, while present, are at a minimum.

In general, all distresses observed, either in isolation or in combination, do not seriously affect the ability of the element to serve the intended functions of protecting drivers from a roadside hazard and/or contributing to the cultural value of the roadway corridor. Keep in mind that “intended function” is a relative term. In many cases, older designs were “intended” to protect drivers but would not be considered fully functional in that regard by today’s standards.

### FAIR

The barrier is slightly compromised. The barrier is noticeably out of alignment and the height along the run of barrier varies considerably. Cracks and broken elements are visible from the roadside. The barrier may be missing elements, such as nuts, bolts, blockouts or even a post. Surface corrosion is visible on a fair amount of the barrier but connections will still provide element interlock. Decay and minor erosion, while not always visible, may begin to reduce element strength and individual post stability.

The end treatment is slightly compromised. The end treatment may be somewhat out of alignment, have low cable anchor tension or isolated broken or cracked rail, posts or blocks. Corrosion and erosion are evident.

In general, the distresses observed, either in isolation or combination, may generate unpredictable outcomes related to the functions of the element stated above.

**POOR**

The barrier is not functional. The barrier will not function as intended. Any of the following could mean that the barrier is in poor condition: The barrier has fallen out of alignment or its height varies greatly from the designed height. Cracks and broken elements are visible from the roadside. The barrier is missing several elements, such as nuts, bolts, blockouts or consecutive posts. Corrosion, causing structural compromise is significant and obvious. Erosion around posts will reduce the barrier's strength and capacity.

The end treatment is not functional. The end treatment does not function as intended. There is no tension in the cable anchor. A significant portion of the end treatment has broken, cracked or dented elements. Elements are missing and corrosion or erosion is significant.

In general, the distresses observed clearly illustrate the inability of the element to perform the intended functions.

## CONDITION AND SEVERITY DISTRESS TABLES – BARRIERS

Condition and Severity Distress Table for Semi-Rigid Barriers (including barriers with posts, rail elements and blocks).

|   | GOOD   | FAIR  | POOR  |
|---|--|---|---|
| <b>Alignment/Design Height</b>  |  |   |   |
|   | <ul style="list-style-type: none"> <li>Alignment off by less than 6"</li> </ul>                                    | <ul style="list-style-type: none"> <li>Alignment off by 6"-12"</li> </ul>   | <ul style="list-style-type: none"> <li>Alignment off by more than 12"</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>Within 1" of <i>design height</i></li> </ul>                                | <ul style="list-style-type: none"> <li>Less than 3" lower than <i>design height</i></li> </ul>  | <ul style="list-style-type: none"> <li>Greater than 3" lower than <i>design height</i></li> </ul>   |
| <b>Breaking/Cracking, an member, post or rail – due to impact loading</b>     |  |   |   |
|   | <ul style="list-style-type: none"> <li>Metal – no twisting/bending, tears or cracking</li> </ul>                   | <ul style="list-style-type: none"> <li>Metal – no cracking or tearing (but minor twisting/bending is ok)</li> </ul>                   | <ul style="list-style-type: none"> <li>Metal – any cracks or tears</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>Wood – no impact related cracking</li> </ul>                                | <ul style="list-style-type: none"> <li>Wood – maybe cracked but retains original cross section</li> </ul>                             | <ul style="list-style-type: none"> <li>Wood – cracks or tears that deform original section</li> </ul>                                       |
|   | <ul style="list-style-type: none"> <li>Isolated broken blocks</li> </ul>   | <ul style="list-style-type: none"> <li>Two Consecutive broken blocks</li> </ul>   | <ul style="list-style-type: none"> <li>Consecutive broken blocks (three or more consecutive)</li> </ul>                                     |
| <b>Missing Elements</b>   |  |   |   |
|   | <ul style="list-style-type: none"> <li>No bolts and nuts missing</li> </ul>  | <ul style="list-style-type: none"> <li>One or two bolt/nut missing at one rail/rail connection</li> </ul>                             | <ul style="list-style-type: none"> <li>Three or more bolts/nuts missing at one rail/rail connection</li> </ul>                              |
|   | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>Two consecutive missing blocks</li> </ul>  | <ul style="list-style-type: none"> <li>Three or more consecutive missing blocks</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   | <ul style="list-style-type: none"> <li>One missing rail element or post</li> </ul>  |
| <b>Corrosion/Decay/Weathering, all posts, rails and blocks – due to aging</b> |  |   |   |
|   | <ul style="list-style-type: none"> <li>Loss of 5% or less of cross section</li> </ul>                              | <ul style="list-style-type: none"> <li>Loss of 5% to 50% of cross section</li> </ul>  | <ul style="list-style-type: none"> <li>Loss of 50% or more of cross section</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>Erosion (less than 8" of post exposed below original groundline)</li> </ul> | <ul style="list-style-type: none"> <li>Erosion around posts (8" or more of post exposed below original groundline) for one</li> </ul> | <ul style="list-style-type: none"> <li>Erosion around consecutive posts (more than 8" of post exposed below original groundline)</li> </ul> |

Condition and Severity Distress Table for Rigid Concrete Barriers (including pre-cast).

| <b>GOOD</b>                                      |  |  |  | <b>FAIR</b>   |  |  |  | <b>POOR</b>   |  |  |  |   |  |  |  |
|--|--|--|--|---|--|--|--|---|--|--|--|---|--|--|--|
| <b>Alignment/Design Height</b>                   |  |  |  |   |  |  |  |   |  |  |  |   |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Alignment off by less than 6"</li> </ul>                       |  |  |  | <ul style="list-style-type: none"> <li>Alignment off by 6"-12"</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Alignment off by more than 12"</li> </ul>                        |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Within 1" of <i>design height</i></li> </ul>                   |  |  |  | <ul style="list-style-type: none"> <li>Less than 3" lower than <i>design height</i></li> </ul>                                |  |  |  | <ul style="list-style-type: none"> <li>Greater than 3" lower than <i>design height</i></li> </ul>       |  |  |  |
| <b>Breaking/Cracking– due to impact loading</b>  |  |  |  |   |  |  |  |   |  |  |  |   |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Minor cracks (less than ¼") present</li> </ul>                 |  |  |  | <ul style="list-style-type: none"> <li>Cracking present ¼" or greater but no displacement or discontinuity in face</li> </ul> |  |  |  | <ul style="list-style-type: none"> <li>Barrier displaced and/or discontinuous</li> </ul>                |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Pieces broken from barrier 3" deep or less without exposing rebar</li> </ul>           |  |  |  | <ul style="list-style-type: none"> <li>Cracking exposes rebar</li> </ul>                                |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Pieces broken from face greater than 3" deep</li> </ul>          |  |  |  |
| <b>Missing Elements</b>                          |  |  |  |   |  |  |  |   |  |  |  |   |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  |
| <b>Corrosion/Decay/Weathering – due to aging</b> |  |  |  |   |  |  |  |   |  |  |  |   |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Surface corrosion on less than 5% of the run</li> </ul>        |  |  |  | <ul style="list-style-type: none"> <li>Surface corrosion on between 5-25% of the run</li> </ul>                               |  |  |  | <ul style="list-style-type: none"> <li>Surface corrosion on more than 25% of the run</li> </ul>         |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Spalling 3" deep or less without exposing rebar</li> </ul>                             |  |  |  | <ul style="list-style-type: none"> <li>Spalling greater than 3" deep</li> </ul>                         |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Erosion (less than 8" below groundline) around base</li> </ul> |  |  |  | <ul style="list-style-type: none"> <li>Erosion (8" or more below groundline) around base</li> </ul>                           |  |  |  | <ul style="list-style-type: none"> <li>Erosion (8" or more below groundline)</li> </ul>                 |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Less than 50% undermined (less than half barrier width)</li> </ul>                     |  |  |  | <ul style="list-style-type: none"> <li>50% or more undermined (less than half barrier width)</li> </ul> |  |  |  |



**Condition and Severity Distress Table for Rigid Stone/Masonry Barriers (including all types of stone or masonry barriers).**

| <b>GOOD</b>                                      |  |  |  | <b>FAIR</b>  |  |  |  | <b>POOR</b>   |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|
| <b>Alignment/Design Height</b>                   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Alignment (off by less than 6")</li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>Alignment (off by 6"-12")</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Alignment (off by more than 12")</li> </ul>   |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Within 3" of <i>design height</i></li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>Between 3.1 - 6" lower than <i>design height</i></li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>Greater than 6.1" lower than <i>design height</i></li> </ul>  |  |  |  |
| <b>Breaking/Cracking – due to impact loading</b> |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Minor cracks (less than ¼") present</li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>Cracks, less than ½" present</li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>Cracks greater than ½" present</li> </ul>   |  |  |  |
|  |  |  |  |  |  |  |  | <ul style="list-style-type: none"> <li>Stones broken/displaced extending less than 1/3 of width of barrier</li> </ul>                                   |  |  |  | <ul style="list-style-type: none"> <li>Stones broken/displaced extending 1/3 width or more through the barrier</li> </ul>  |  |  |  |
| <b>Missing Elements</b>                          |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  |  |  |  |
| <b>Corrosion/Decay/Weathering – due to aging</b> |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Cracks in mortar joints 1/4" or less and/or single loose or missing stones</li> </ul> |  |  |  | <ul style="list-style-type: none"> <li>Mortar joints deteriorated resulting in two - three loose or missing adjacent stones (without impact)</li> </ul> |  |  |  | <ul style="list-style-type: none"> <li>Mortar joints deteriorated resulting in more than three continuous/adjacent loose or missing stones (without impact)</li> </ul> |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>Erosion (less than 8" below groundline) around base</li> </ul>                        |  |  |  | <ul style="list-style-type: none"> <li>Erosion (8" or more below groundline) around base</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>Erosion (8" or more below groundline)</li> </ul>  |  |  |  |
|  |  |  |  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  |  |  |  | <ul style="list-style-type: none"> <li>Less than 50% undermined (less than half barrier width)</li> </ul>   |  |  |  | <ul style="list-style-type: none"> <li>50% or more undermined (less than half barrier width)</li> </ul>  |  |  |  |

**Condition and Severity Distress Table for Flexible Barriers, (including cable barriers and weak-post systems designed without blocks).**

|  | <b>GOOD</b>  | <b>FAIR</b>  | <b>POOR</b>   |
|--|--|--|---|
| <b>Alignment/Tension/Design Height</b>           |  |  |   |
|  | <ul style="list-style-type: none"> <li>No bent posts</li> </ul>  | <ul style="list-style-type: none"> <li>Bent posts; one to three consecutive posts</li> </ul>                                     | <ul style="list-style-type: none"> <li>Bent posts; four or more consecutive posts</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Cable has tension</li> </ul>  | <ul style="list-style-type: none"> <li>Cable under-tensioned/sagging</li> </ul>  | <ul style="list-style-type: none"> <li>No cable tension</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Less than 1" too low</li> </ul>   | <ul style="list-style-type: none"> <li>1-3" too low</li> </ul>   | <ul style="list-style-type: none"> <li>Greater than 3" too low</li> </ul>   |
| <b>Breaking/Cracking</b>                         |  |  |   |
|  | <ul style="list-style-type: none"> <li>No cracked or broken posts</li> </ul>                                       | <ul style="list-style-type: none"> <li>One to three isolated broken posts</li> </ul>   | <ul style="list-style-type: none"> <li>Four or more consecutive broken posts</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>Cable frayed</li> </ul>   | <ul style="list-style-type: none"> <li>Cable broken or severed</li> </ul>   |
| <b>Missing Elements</b>                          |  |  |   |
|  | <ul style="list-style-type: none"> <li>No bolts and nuts missing at anchors</li> </ul>                             | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>Bolts and nuts missing or loose at anchors</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>Any missing posts or cable for any length of run</li> </ul>  |
| <b>Corrosion/Decay/Weathering – due to aging</b> |  |  |   |
|  | <ul style="list-style-type: none"> <li>Loss of 5% or less of cable cross section</li> </ul>                        | <ul style="list-style-type: none"> <li>Loss of 5% to 15% of cable cross section</li> </ul>                                       | <ul style="list-style-type: none"> <li>Loss of 15% or more of cross section</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Erosion (less than 8" of post exposed below original groundline)</li> </ul> | <ul style="list-style-type: none"> <li>Erosion around one post (8" or more of post exposed below original groundline)</li> </ul> | <ul style="list-style-type: none"> <li>Erosion around consecutive posts (more than 8" of post exposed below original groundline)</li> </ul> |

## CONDITION AND SEVERITY DISTRESS TABLES – END TREATMENTS

Condition and Severity Distress Table for Flexible End Treatments, (including cable end terminals).

|  | GOOD   | FAIR   | POOR  |
|--|--|--|---|
| <b>Alignment/Tension</b>                         |  |  |   |
|  | <ul style="list-style-type: none"> <li>Alignment off by less than 4"</li> </ul>  | <ul style="list-style-type: none"> <li>Alignment off by 4"-8"</li> </ul>   | <ul style="list-style-type: none"> <li>Alignment off by more than 8"</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>Adequate cable tension</li> </ul>   | <ul style="list-style-type: none"> <li>Low cable anchor tension</li> </ul>   | <ul style="list-style-type: none"> <li>No cable anchor tension</li> </ul>   |
| <b>Breaking/Cracking – due to impact loading</b> |  |  |   |
|  | <ul style="list-style-type: none"> <li>No broken or cracked elements</li> </ul>  | <ul style="list-style-type: none"> <li>Minor cable fraying but still with adequate tension</li> </ul>  | <ul style="list-style-type: none"> <li>Broken or cracked cables or posts</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>No damage to posts, cable or anchor</li> </ul>  | <ul style="list-style-type: none"> <li>Slight damage to posts without cracking or tearing (<i>but minor twisting/bending on isolated posts is OK</i>)</li> </ul> | <ul style="list-style-type: none"> <li>Cable broken or severed on any cable</li> </ul>  |
| <b>Missing Elements</b>                          |  |  |   |
|  | <ul style="list-style-type: none"> <li>No bolts and nuts missing at anchors; No missing cables</li> </ul>  | <ul style="list-style-type: none"> <li>n/a</li> </ul>  | <ul style="list-style-type: none"> <li>Any missing element (post, cable, bolts, nuts, or anchor)</li> </ul>                                       |
| <b>Corrosion/Decay/Weathering – due to aging</b> |  |  |   |
|  | <ul style="list-style-type: none"> <li>Loss of 5% or less of cable cross section</li> </ul>  | <ul style="list-style-type: none"> <li>Loss of 5% to 15% of cable cross section</li> </ul>   | <ul style="list-style-type: none"> <li>Loss of 15% or more of cross section</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>Connections weathered but still provide element interlock on less than 5% of the end treatment</li> </ul> | <ul style="list-style-type: none"> <li>Connections weathered but still provide element interlock on between 5% to 15% of the end treatment</li> </ul>            | <ul style="list-style-type: none"> <li>Connections weathered but still provide element interlock on more than 15% of the end treatment</li> </ul> |

**Condition and Severity Distress Table for Semi-Rigid End Treatments, including Flared and Tangent**

|  |   |   |   | <b>GOOD</b> | <b>FAIR</b> | <b>POOR</b> |
|--|---|---|---|-------------|-------------|-------------|
| <b>Alignment/Tension</b>   |   |   |   |             |             |             |
|  | <ul style="list-style-type: none"> <li>Alignment of flares and offsets off by less than 4”</li> </ul>   | <ul style="list-style-type: none"> <li>Alignment of flares and offsets off by 4”-8”</li> </ul>  | <ul style="list-style-type: none"> <li>Alignment of flares and offsets off by more than 8”</li> </ul>   |             |             |             |
|  | <ul style="list-style-type: none"> <li>Within 1” of <i>design height</i></li> </ul>   | <ul style="list-style-type: none"> <li>Less than 3” lower than <i>design height</i></li> </ul>  | <ul style="list-style-type: none"> <li>Greater than 3” lower than <i>design height</i></li> </ul>   |             |             |             |
| For <i>Aesthetic Barriers</i> (i.e. – SBT and SBL guardrail) that do not have crashworthy terminals: | <ul style="list-style-type: none"> <li>Approach barrier terminals are buried, anchored, and flared away from the travel lane</li> </ul>                                 | <ul style="list-style-type: none"> <li>Approach barrier terminals are buried, anchored, and flared away from the travel lane</li> </ul>   | <ul style="list-style-type: none"> <li>Approach barrier ends are NOT buried, anchored, nor flared away from the travel lane</li> </ul>  |             |             |             |
| <b>Breaking/Cracking – due to impact loading</b>   |   |   |   |             |             |             |
|  | <ul style="list-style-type: none"> <li>Metal – no twisting/bending, tears or cracking</li> </ul>  | <ul style="list-style-type: none"> <li>Metal – no cracking or tearing (but minor twisting or bending is ok)</li> </ul>  | <ul style="list-style-type: none"> <li>Metal – any cracks or tears</li> </ul>   |             |             |             |
|  | <ul style="list-style-type: none"> <li>Wood – no impact related cracking</li> </ul>   | <ul style="list-style-type: none"> <li>Wood – maybe cracked but retains original cross section</li> </ul>   | <ul style="list-style-type: none"> <li>Wood – cracks or tears that deform original section</li> </ul>   |             |             |             |
|  | <ul style="list-style-type: none"> <li>No broken blocks</li> </ul>  | <ul style="list-style-type: none"> <li>One broken block</li> </ul>  | <ul style="list-style-type: none"> <li>Two consecutive broken blocks</li> </ul>   |             |             |             |
| <b>Missing Elements</b>  |   |   |   |             |             |             |
|  | <ul style="list-style-type: none"> <li>No missing elements, including breakaway cables and struts</li> </ul>  | <ul style="list-style-type: none"> <li>Isolated bolts, nuts, or blocks loose on non-consecutive posts</li> </ul>  | <ul style="list-style-type: none"> <li>Any missing element, including blocks, rails, posts cables, or struts</li> </ul>   |             |             |             |
|  | <ul style="list-style-type: none"> <li>No bolts, nuts, or blocks missing or loose</li> </ul>  | <ul style="list-style-type: none"> <li>Breakaway strut present but vertical height off by more than 2”</li> </ul>   | <ul style="list-style-type: none"> <li>Missing nuts / bolts on consecutive posts</li> </ul>   |             |             |             |
| <b>Corrosion/Decay/Weathering – due to aging</b>   |   |   |   |             |             |             |
|  | <ul style="list-style-type: none"> <li>Surface corrosion / decay / connections weathered with a loss of 5% or less of cross section of interlocking elements</li> </ul> | <ul style="list-style-type: none"> <li>Surface corrosion / decay / connections weathered with between 5-25% loss of cross section along transition interlocking elements</li> </ul> | <ul style="list-style-type: none"> <li>Surface corrosion / decay / connections weathered with more than 25% loss of cross section along transition interlocking elements</li> </ul> |             |             |             |
|  | <ul style="list-style-type: none"> <li>Erosion (less than 8” of post exposed below original groundline)</li> </ul>  | <ul style="list-style-type: none"> <li>Erosion around 1 post (8” or more of post exposed below original groundline)</li> </ul>  | <ul style="list-style-type: none"> <li>Erosion around consecutive posts (8” or more of post exposed below original groundline)</li> </ul>   |             |             |             |

## SPECIFIC RISK ELEMENTS

The potential risk to a motorist after a vehicle impacts a traffic barrier depends on the crashworthiness of the traffic barrier as well as traffic exposure factors. Variables relating to the roadside, the traffic barrier's crashworthiness and traffic data include the following:

*ADT.* The number of vehicles (in both directions) that travel the roadway on which the traffic barrier is located.

*Barrier Crashworthy.* A traffic barrier is crashworthy if it was successfully crash tested under NCHRP Report 350 at speeds along the park road or parkway or if it was accepted through analysis by FHWA, based on similarity to other crashworthy critical design element features. If crashworthy, the appropriate test level also needs to be recorded. For crashworthy barriers, the barrier test level will be compared to the test level appropriate for the roadway (based solely on posted speed limit). The intent is to record situations in which a crashworthy barrier of a lower test level is installed on a roadway which should have a barrier of a higher test level.

*Barrier Height.* Determined from barrier height as collected in the physical condition assessment. The database will compare this value to the NCHRP test level height that is appropriate for the posted speed of the road and barrier type.

*End Treatment Crashworthy.* An end treatment is crashworthy if it has been successfully crash tested. This is for the approach end treatment, which is defined as the end treatment which a vehicle will first pass when traveling on the same side of the road as the barrier.

*Existing Roadway Features.* The list of roadway features is limited to the following, all of which have a documented history of reducing the number of crashes, and are found later in the GIP as possible countermeasures.

|                              |                                  |
|------------------------------|----------------------------------|
| Centerline pavement markings | Grooved pavement surface         |
| Edgeline pavement markings   | Delineators on curve and tangent |
| Wider centerline             | Chevrons                         |
| Wider edgeline               | Warning sign                     |
| Centerline rumble strips     | Flashing beacon on warning sign  |
| Shoulder rumble strips       | Lighting                         |
| Barrier reflectors           | Speed feedback sign              |

*Factored Crash Rate.* The average annual number of crashes (on the overall road and by barrier segment), over the last 5 years. If the road has an ADT of less than 1000, evaluate a minimum of 7 to 10 years of crash data, if available.

*Lateral Offset of Barrier from Edge of Traveled Way.* The distance from the edge of traveled way to the face of the barrier is useful for determining impact to asset during different types of construction. Two or three measurements will be taken – beginning, middle and end of barrier run (not including the end treatments) – and the average will be used.

*Posted Speed Limit.* The posted speed limit(s) of the roadway section.

*Roadway Grade and Uphill or Downhill.* Is refers to the grade of the roadway, in the direction of travel closest to the barrier.

*Severity of the Hazard behind Barrier.* A rating system based on photos will be used to rate the severity of the hazard behind the barrier. Choices include:

- Low
- Medium
- High
- Extreme

## **RISK ASSESSMENT AND RISK SCORE**

The following table shows the variables relating to the overall roadway safety in the vicinity of barriers. In addition, the table illustrates the range of values considered for each variable and associated levels of risk. For categorization purposes, variables have been placed into one of three categories: segment, site or barrier variables. The “Associated Risk” column identifies the relative risk posed by each variable. This looks at the relative risk of the each variable itself and is only a cursory evaluation.

A Risk Score or Rating (“Barrier Rating” on Tier 3 Barrier page) was created for each barrier based on the table values. The level of risk tolerated is dependent on the category of road, which will be discussed in subsequent pages.

Once the inventory has been conducted, a total risk value can be assigned to each barrier. A comparison of the relative risk to an acceptable risk threshold will be performed in order to analyze the overall risk of a given barrier.

### Variable and Associated Levels of Risk

| VARIABLE  | RANGE                               | ASSOCIATED RISK |
|---|-------------------------------------|-----------------|
| <b>SEGMENT VARIABLES</b>                                  |                                     |                 |
| ADT   | 0 – 1000                            | 0.0             |
|   | 1001 – 4000                         | 2.9             |
|   | 4001 – 8000                         | 5.7             |
|   | 8001 – 20,000                       | 7.1             |
|   | 20,001 and greater                  | 8.6             |
| Crash Factor  | 0                                   | 0.0             |
|   | 0.1 – 5.0                           | 4.2             |
|   | 5.1 – 20.0                          | 8.7             |
|   | 20.1 – 30.0                         | 17.1            |
|   | 30.1 – 75.0                         | 25.8            |
|   | 75.1 and greater                    | 34.2            |
| Posted Speed Limit  | 15 – 25 mph                         | 0.0             |
|   | 30 – 40 mph                         | 4.3             |
|   | 45 and higher                       | 8.6             |
| <b>SITE VARIABLES</b>                                     |                                     |                 |
| Barrier Placement w/ Respect to Roadway Geometry          | Tangent                             | 0.0             |
|   | Inside of curve                     | 2.9             |
|   | Both inside and outside of curve    | 8.6             |
| Severity of Hazard behind the Barrier                     | Outside of curve                    | 8.6             |
|   | Low severity                        | 2.6             |
|   | Medium severity                     | 5.1             |
|   | High severity                       | 6.9             |
| Longitudinal Length of Barrier                            | Extreme severity                    | 8.6             |
|   | 1 – 250-ft                          | 0.0             |
|   | 251 – 750-ft                        | 2.9             |
|   | 751 – ft and greater                | 5.7             |
| Lateral Offset of Barrier from Edge of Traveled Way       | 4.1 – ft and greater                | 0.0             |
|   | 2 – 4-ft                            | 2.9             |
|   | less than 2-ft                      | 5.7             |
| Roadway Grade   | Uphill/level/downgrade less than 3% | 0.0             |
|   | Mild downgrade (3 – 6%)             | 4.3             |
|   | Steep downgrade (greater than 6%)   | 8.6             |
| <b>BARRIER VARIABLES</b>                                  |                                     |                 |
| Actual Barrier Height (compared to test level height)     | 0 – 1-in lower                      | 0.0             |
|   | 1.1 – 4-in lower                    | 4.4             |
|   | 4.1 – 7-in lower                    | 12.9            |
|   | 7.1 – 12-in lower                   | 19.4            |
|   | 12.1-in and greater lower           | 21.5            |
| Dynamic Barrier Condition Rating (based on design height) | 0 – 25                              | 0.0             |
|   | 26 – 200                            | 4.4             |
|   | 201 – 400                           | 8.6             |
|   | 401 – 600                           | 12.9            |
|   | 601 – 800                           | 17.1            |
|   | 801 and above                       | 21.5            |
| Barrier Conformance with Current Crashworthiness Criteria | Yes                                 | 0.0             |
|   | No                                  | 5.7             |
| <b>Maximum Total Possible Risk Score</b>                  |                                     | <b>100</b>      |

## REPLACEMENT/REPAIR STRATEGIES

Information is integrated by combining static data on barrier type, materials, dimensions, etc. with the condition and risk assessments, and the asset management roadway categories (which include cultural and historic resource considerations) to come up with actionable repair strategies for barriers. In addition, repair costs are accounted for so that estimates can be made for repair actions identified. Costed repair estimates, or work orders, then form the basis for estimating deferred maintenance associated with roadside barriers.

Repair recommendations generated by this assessment are intended to provide an estimated cost of deferred maintenance of barriers. As such, the evaluation is not rigorous and may be changed when a more detailed review and assessment at a project level is completed. In addition, any repairs or replacements that are recommended by this inventory and assessment process must be vetted through a project selection, planning and design process, including compliance with the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA).

Many park barriers are located in harsh environments where freeze-thaw cycles, avalanche impacts, surface erosion, rockfall and vehicle impacts damage them; consequently, they are showing signs of fatigue, at times serious. Whenever possible, historic barriers are repaired or rehabilitated in place so that the historic significance can be preserved; however, removal or reconstruction, which is typically the least preferred alternative, is at times necessary.

Barrier deficiencies can generally be categorized into one of two categories:

- Barriers that pose an unacceptable risk to the traveling public (as determined by the risk assessment methods described in Chapter Seven and including standards found in NCHRP Report 350), or
- Damaged barriers, due to either crash impacts, other loadings (e.g., snow / avalanche, etc) or deteriorated parts (from age / weathering).

Outside of the national park system, barriers that do not meet NCHRP Report 350 crashworthiness standards are typically removed and a barrier of a crashworthy design is constructed in its place. However given the sensitive natural and cultural environments found within the national park system, deficient barriers not meeting national crashworthiness standards may warrant no action, particularly where risk is low.

The type of repair strategy is often dependent on the barrier deficiency and its cultural context. Typically barriers that do not meet current crashworthiness criteria may be replaced while damaged or deteriorated barriers can be repaired. However, under unique situations found in certain national parks and as evaluated using the risk assessment and asset management roadway categories, some barriers that do not meet current crashworthiness criteria may warrant no action being taken for their replacement or repair.

Risk assessment and asset management roadway categories are integrated in the following table, which establishes different risk thresholds within each roadway category. In essence, a higher level of risk will be tolerated in Asset Management Roadway Category A, as demonstrated by the higher risk threshold (90), while less risk will be tolerated in Roadway Category B (70) and even less risk in Roadway Category C (50).



**Asset Management Roadway Categories, Risk Thresholds and Treatment Recommendations.**

| ASSET MANAGEMENT ROADWAY CATEGORY | RISK THRESHOLD | PROGRAM-LEVEL TREATMENT RECOMMENDATION  |
|-----------------------------------|----------------|---|
| A                                 | 90-100         | 1. Identify measures other than barrier replacement that could be taken to reduce risk (including engineering countermeasures).<br>2. Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 90.                             |
|                                   | Below 90       | 1. Identify measures that could be taken to reduce risk (including engineered countermeasures).<br>2. Identify repairs needed to improve physical condition/maintain historic integrity.<br>3. When condition is good and risk is acceptable, no action is necessary. |
| B                                 | 70-100         | 1. Identify measures that could be taken to reduce risk (including engineered countermeasures).<br>2. Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 70.   |
|                                   | Below 70       | 1. Identify measures that could be taken to reduce risk (including engineered countermeasures).<br>2. Identify repairs needed to improve physical condition/maintain historic integrity.<br>3. When condition is good and risk is acceptable, no action is necessary. |
| C                                 | 50-100         | 1. Identify measures that could be taken to reduce risk (including engineered countermeasures).<br>2. Corrective action (including reconstruct/replacement, if necessary) needed to reduce risk below 50.   |
|                                   | Below 50       | 1. Identify measures that could be taken to reduce risk (including engineered countermeasures).<br>2. Identify repairs needed to improve physical condition/maintain historic integrity.<br>3. When condition is good and risk is acceptable, no action is necessary. |

Fourteen engineering countermeasures have been specifically selected for use with the GIP risk assessment tool, and are show in the next table. This is an all-inclusive list of available countermeasures for the risk assessment toll; countermeasures not on the list should not be considered.

The concept of employing countermeasures is evident with barriers that have a risk score just above the risk threshold. For such barriers, installing countermeasures should reduce the future number of crashes by a given amount, based on the countermeasure. Depending on the factored crash rate, reducing the number of crashes will lower the overall risk score. Thus, barriers that were classified as “reconstruct/replace” may be able to be reclassified as “repair”.

The decision to include any of the engineering countermeasures can be done only when the risk score is over the risk threshold by three points or less. When countermeasures are employed to reduce the risk score, they must be based on engineering judgment. The GIP database will allow the user to select up to three countermeasures to reduce the risk score under the threshold, based on crash reduction factors from the FHWA publication “Desktop Reference for Crash Reduction Factors” FHWA-SA-07-015.

### Proposed Countermeasures.

| COUNTERMEASURE                    | CRASH REDUCTION FACTOR |
|-----------------------------------|------------------------|
| Speed Feedback Signs              | 0.46                   |
| Flashing Beacons On Warning Signs | 0.30                   |
| Centerline Pavement Marking       | 0.30                   |
| Lighting                          | 0.25                   |
| Chevrons                          | 0.20                   |
| Warning Signs                     | 0.20                   |
| Barrier Reflectors                | 0.16                   |
| Grooved Pavement Surface          | 0.15                   |
| Edgeline Pavement Marking         | 0.12                   |
| Shoulder Rumble Strips            | 0.12                   |
| Delineators on Curve and Tangent  | 0.05                   |
| Centerline Rumble Strips          | 0.04                   |
| Wider Edgeline                    | 0.02                   |
| Wider Centerline                  | 0.02                   |

### Maintaining Barriers As Is

Individual barrier elements and roadside conditions are interrelated. Sometimes, barrier deficiencies will be obvious and the best course of action is apparent; however, in context sensitive environments barrier deficiencies may be marginal and a decision will be based on judgment.

If risk is low (as determined by the assessment of variables such as traffic speeds, volumes), it may be acceptable for an historical or culturally significant barrier that does not meet current crashworthiness standards to remain until changes in risk factors would require an upgrading.

If the maintaining barrier as is alternative is the preferred choice through this approach, low cost mitigation measures may be considered to improve safety, such as improving roadside delineation (e.g., pavement markings / rumble strip(e)s, etc.), improving visibility (e.g., advance warning signs, increased sign size, etc.), upgrading the roadway shoulder, or improving skid resistance of the road surface. Although these measures will not reduce crash severity of an errant vehicle impact, these improvements have been tried or proven to reduce the frequency or probability of a vehicle striking the barrier.

### Barrier Repair

If a barrier has been damaged due to a crash or there are parts that have deteriorated due to age or weathering but the majority of the barrier meets current crashworthiness standards and is functionally sound, repairing the system can be considered a viable option. Examples of these improvements include replacing damaged timber rail, removing a corroded, weathered steel post and replacing with new, upgraded guardrail blockouts to meet standards on high speed facilities or repointing, resetting or replacing loose or missing stones on the concrete corewalls of stone masonry guardwalls. Pursuing a repair approach should be the first consideration for Roadway Category A and B road assets.

For barriers that do not meet crashworthiness criteria but are functionally sound and have been determined good candidates to be maintained as-is based on the risk assessment and application of asset management roadway categories, repair could include measures such as repointing deteriorated masonry, re-setting or replacing loose, broken or missing stones, restoring walls to their original height (by adding a concrete footing, for example), restoring or improving drainage through or under walls or restoring wall foundations. Alterations to improve safety may also be considered, such as adding or changing end treatments or other mitigation measures as mentioned above.

For historic, stone masonry barriers that have a risk score below the threshold, it is possible that portions of the barrier need to be removed and reset in order increase the height of the barrier. The following guidelines are provided to assist in determining when this should be done and to what height the barrier should be rebuilt:

1. If all or a portion of stone masonry guardwall has a deficient height based upon the Severity Description Charts, that is, at worst, within the fair category, do not raise it. (Other work besides raising the barrier can be specified.)
2. If a portion of a stone masonry guardwall has a deficiency in height based upon the Severity Description Charts, considered “poor” (assumed typically to be less than 18-in) write a work order to raise the poor segment to the height of the adjacent barrier with a non-poor height.
3. If the entire stone masonry guardwall is in poor condition due to height based upon the Severity Description Charts– write a work order to raise the entire segment to its design height (assumed typically to be 24-in).

For aesthetic barrier systems used on many park roads and parkways, there is not a sufficient bid history database for estimating costs to repair or replace individual elements of the system, such as posts or rail. Usually repair of an aesthetic barrier system, such as steel-backed timber guardrail consists of removing and resetting the post or rail section or raising the guardrail to meet standard height requirements.

### **Barrier Replacement/Reconstruction**

If the risk analysis, including the application of asset management roadway categories, indicates the barrier poses an unacceptable safety risk, the first step should be an analysis to determine if there are mitigating measures that can be applied to reduce the risk to an acceptable level without the need to reconstruct the barrier. A second step is to determine if the barrier is needed. If it is practical to eliminate the shielded hazard (by removal, relocation or redesign) removal of the barrier should be considered. However, if the shielded hazard cannot be eliminated or if it is determined inappropriate to remove the barrier (e.g., it is historically significant and/or contributes to the historical or aesthetic significance of the associated road, district or landscape), reconstruction or replacement of the barrier to meet current criteria for crashworthiness may be the appropriate recommended treatment.

The typical reconstruction option used by the NPS for stone masonry guardwalls is to document then dismantle the existing barrier, construct a concrete core and build a stone masonry veneer around the concrete core using the original wall materials and using stone masonry designs that are compatible with the historic road, district or landscape. A number of concrete core stone masonry barrier types have been designed for use in national parks, including 18-in, 22-in, 24-in and 27-in barriers; however, not all have been crash tested or otherwise determined to meet current criteria for crashworthiness.

## WORK ORDERS

Work order preparation is essentially determining and documenting the repair actions needed to correct the deficiencies observed during the condition assessment. Barriers are relatively simple structures so this determination can be made by trained inspectors. Keep in mind that this is not a design environment and that more rigorous analysis (if needed) may change the work that is actually performed. The intent of this effort is to prepare a credible estimate of deferred maintenance that may or may not be directly actionable. Simple repairs and/or those that require no compliance with environmental policies (which may be a large percentage of the work orders) can probably be executed without modification.

Once a repair strategy is determined, a cost must be developed for the proposed action. Work orders will be classified as being either deferred maintenance or capital improvement. This classification is based on the type of work recommended, as defined below.

Definition: *Deferred Maintenance* can be classified as repair or replace in kind. Work done to the barrier does not include any upgrading.

Definition: *Capital Improvement* can be classified as upgrading existing barrier. Typically the upgrade will be from a non-crashworthy to a crashworthy device. Other examples of capital improvements would be the addition of a curb to improve drainage or the inclusion of any countermeasure.

There are four types of work:

- No Action
- Monitor
- Repair
- Replace

“No Action” – if risk is low (based on the GIP risk score), a barrier that does not meet current crashworthy performance standards may be acceptable to remain until changes in risk factors would require upgrading.

“Monitor” – if risk is low (based on the GIP risk score), a barrier that does not meet current crashworthy performance standards may be acceptable to remain until changes in risk factors would require upgrading, however, if conditions exist that the park should monitor (e.g., erosion), then “monitor” can be selected as a recommended action.

“Repair” – considered when a barrier damaged by impact deteriorated due to age/weathering and the barrier is functionally sound in a low risk environment. The goal is to bring the barrier back to its “new” condition.

“Replacement/Reconstruction” – when a barrier poses an unacceptable safety risk:

1. If the risk score is less than 3 points above the risk threshold, determine if countermeasures can reduce risk so the barrier can be repaired.
2. Determine if the barrier is warranted and either shielded hazard or barrier itself can be removed (only when barrier NOT considered historically/culturally significant)

For all barrier repair/replace/reconstruction recommendations, the NPS will vet the recommendations through a project selection, planning and design process, including compliance with:

National Historic Preservation Act (NHPA)

National Environmental Policy Act (NEPA)

Aesthetic barriers are commensurate with an approved crashworthy design for the specific conditions at the barrier site as the basis for selecting a crashworthy structure. Types of barriers are generally selected based on emulating the existing types of barriers in the park.