

WOODROW WILSON BRIDGE PROJECT – DESIGN CONCEPT

City of Alexandria, Virginia, Prince George’s County, Maryland
and the District of Columbia

Report to the Federal Highway Administration

April 8, 1999

Abstract

The Federal Highway Administration (FHWA) is commended for their professionalism in effectively managing a design process that has resulted in a design concept for a replacement bridge that meets or exceeds the design goals as stipulated in the Memorandum of Agreement. The creative V-shaped arch pier design conveys the feeling of “openness” by allowing natural light to pass through the bridge and ultimately preserving river views. This effectively blends the bridge into the natural setting of the Potomac River scenic corridor. The graceful beauty and strength of the proposed arch pier design and the low profile of the bridge will also serve as a reminder of other “Gateway” bridges to Washington, most notably Francis Scott Key Bridge. The FHWA will continue to work with all stakeholders, including the Commission, to refine the design and to provide the Commission with more detailed information and illustrative drawings with respect to such issues as a night lighting scheme; color and texture of the exterior finish of the bridge; exterior treatment of the bridge abutments at Jones Point Park and Rosalie Island; and design plans of potential noise barriers at each end of the bridge.

Authority

Section 5 of the National Capital Planning Act of 1952, as amended (40 U.S.C. 71d), and D.C. Code, sec. 5-432 (in-lieu-of zoning).

Commission Action

The Commission:

- **Approves** the design concept plans for the replacement Woodrow Wilson Bridge, as shown on NCPC Map File No. 08.21(3200.00)-40612.
- **Requests** that, in the preparation of preliminary site and building plans, the FHWA provide more detailed information and illustrative drawings for the following:
 - Provide a night lighting scheme that shows lighting of the V-shaped arch piers, the roadway deck, and especially underneath the bridge at Jones Point Park, as viewed from the Virginia and Maryland shores and the Nation’s Capital.

- Provide texture and color of the exterior finish of the bridge. Include:
 - Piers.
 - Roadway deck and furniture, including railings, light fixtures, and signage.
 - Bridge tower.
 - Underneath the bridge and its abutments at Jones Point Park and Rosalie Island.
- Provide detail design plans of the:
 - Roadway deck railings, light fixtures, and signage.
 - Bridge control tower.
 - Pedestrian/bicycle pathway along the bridge and its linkage or connections to trails or paths in Virginia and Maryland.
 - Potential noise barriers at each end of the bridge.
- Provide a noise analysis of the proposed bridge to address the issue of noise impacts generated by steel box girders, including any “resonance” or reverberation impacts.
- Provide landscape plans at the bridge abutment areas at Jones Point Park and Rosalie Island.
- **Requests** that prior to the final bridge design FHWA, in cooperation with the City of Alexandria, Prince George’s County, and National Park Service officials, submit for Commission review design plans for Jones Point Park and the related overpass urban deck in Virginia and Rosalie Island (Queen Anne’s Park) and the Beltway overpass deck in Maryland. These areas frame the approaches to the bridge, and therefore are a part of the “Gateway” to the Nation’s Capital.

* * *

BACKGROUND AND STAFF EVALUATION

DESCRIPTION OF THE PROPOSAL

The Federal Highway Administration has submitted design concept plans for a new bridge to replace the Woodrow Wilson Memorial Bridge (Wilson Bridge) which carries Interstate 95/Interstate 495, the Capital Beltway across the Potomac River. Designed as a

national memorial bridge to former President Woodrow Wilson, this six-lane bridge was opened to traffic in 1964 to accommodate approximately 75,000 vehicles per day. Today, travel demand for the bridge has risen to over 190,000 vehicles daily. At this rate, FHWA estimates that by the year 2004, the Wilson Bridge will require substantial rehabilitation or a restrictive ban on vehicles weighing more than 20,000 pounds.

To address this concern, in 1991 the FHWA was identified as the lead federal agency to conduct environmental studies and alternatives. These were presented in a Draft Environmental Impact Statement/Section 4(f) Evaluation (DEIS) and two Supplemental DEIS, as well as the establishment of coordinating committees and public hearings to receive public comments. This process culminated in the issuance of the Final EIS on September 2, 1997 and completion of the Section 106 Memorandum of Agreement with a Record of Decision (ROD) on November 27, 1997. The ROD commits the FHWA to a number of stipulations intended to mitigate impacts on adjacent communities. This includes a conceptual mitigation plan for Jones Point Park in Virginia and a future Queen Anne's Park on Rosalie Island in Maryland. The National Park Service is the landowner of Jones Point Park and Rosalie Island, north of the bridge.

In January 1998, a Bridge Design Competition was launched. A select design jury assisted by four advisory committees reviewed submitted bridge designs from seven entrants. A Design Review Working Group had also been established to review the designs in conformance with the design goals and guidelines (attached) as stipulated in the Section 106 Memorandum of Agreement (MOA). This group was also actively involved in the selection of the winning design. On November 18, 1998, a conceptual design was selected and announced to the public.

The extent of the Commission's review of conceptual design consists of the main span of the bridge from landing to landing, including the parks and overpass decks. The Virginia landing is the bridge abutment located generally at Royal Street, west of Jones Point Park. This includes the uses under the bridge and the overpass urban deck at Washington Street (George Washington Memorial Parkway) which is part of the approach to the Wilson Bridge. The Maryland landing is the bridge abutment located on Rosalie Island, including the overpass deck, which is part of the bridge approach from Maryland.

Proposed Wilson Bridge Design Concept

- The main span of the bridge consists of 18 V-shaped piers with arched or curved legs that support a concrete roadway bed and steel box girders compared with the existing beam bridge that has 57 piers.
- The twin-bridge, draw span facility (15 feet separation) would be built immediately adjacent and parallel to the existing bridge alignment. Bridge length is 6,055 feet (existing is 5,900 feet). Overall bridge width is 257 feet (existing is 90 feet). Vertical clearance over the river's navigation channel in the closed position is 70 feet (existing is 50 feet).
- The bridge would function with ten lanes but is designed to accommodate two additional lanes for HOV purposes.

- A 12-foot-wide access path for pedestrians/bicyclists would be provided along the northern edge of the bridge with connections to trails in Virginia (Mount Vernon Memorial Trail) and Maryland (Potomac Heritage Trail and the proposed National Harbor development).
- The bridge control tower would provide access to pedestrians from Jones Point Park, as well as encouraging people on the bridge to visit the park.
- In accordance with the conceptual mitigation plan articulated in the Final EIS and the signed MOA, Jones Point Park would be enhanced as an *active* recreational facility with historic interpretations, and park and shoreline improvements. The mitigation plan also includes a deck over the Beltway in the area of Washington Street (George Washington Memorial Parkway).
- In accordance with the conceptual mitigation plan articulated in the Final EIS and the signed MOA, Rosalie Island would be enhanced as a *passive* recreational facility in keeping with the natural conditions of the island. It would include a deck over the Beltway on the island, natural trail or path connections to the Potomac Heritage Trail, and connections to the north (Oxon Cove Park) and south (future Queen Anne's Park) sides of Rosalie Island.

Construction of the new bridge is scheduled to begin in late 2000. The first of the twin bridges is anticipated to be completed by 2004 with the second twin bridge to be completed in 2006. The old Wilson Bridge would be removed after completion of the second twin bridge.

PREVIOUS COMMISSION ACTION

At its *September 5, 1996* meeting, the Commission approved comments on FHWA's Supplemental Draft Environmental Impact Statement/Section 4(f) Evaluation for the Woodrow Wilson Bridge Improvement Study. In its comments, the Commission encouraged FHWA to continue to coordinate with federal, state, and local agencies, civic organizations, and individuals. The Commission also reiterated its position that the design of the replacement bridge should establish a "Gateway" for the National Capital. Essentially, the Commission concurred with FHWA that an arch design would be favorable because it would address the gateway design issue by emulating other regional arch designs and that the "windows" or openings would allow light to pass through the bridge. This would, in effect, help to reduce man made forms in the natural setting of the Potomac River corridor and it would reduce adverse impacts on aquatic life by permitting aquatic vegetation to absorb more sunlight.

At its *March 7, 1996* meeting, the Commission approved comments on an earlier version of the Supplemental DEIS. In its letter, the Commission identified federal interests and summarized comments pertaining to transportation, urban design, historic preservation, and the Comprehensive Plan. Federal interests identified in the letter included: the Wilson Bridge; Jones Point Park; Mount Vernon Memorial Parkway; Oxon Cove Park/Oxon Hill Children's Farm; historic districts and historic landmarks, such as the Alexandria Historic District and historic and scenic viewsheds encompassing the

Potomac River; the Monumental Core; Smoot Bay; and Rosalie Island. Regarding federal parkland and the Mount Vernon Memorial Parkway, the Commission strongly urged FHWA to continue to refine alternatives and continue to coordinate with the National Park Service and the U.S. Fish and Wildlife Service to minimize wetlands disturbance. The Commission discouraged awkward designs that would detract from a desired image of simplicity and dignity and the establishment of a “Gateway.”

At its *November 7, 1991* meeting, the Commission reviewed the Draft Environmental Impact Statement and approved comments for FHWA’s consideration. The subsequent letter identified federal interests, as described above, in the more recent Commission meetings and basically commented on the potential impacts on such interests for each of the alternatives.

CONSULTATION WITH FEDERAL HIGHWAY ADMINISTRATION

In addition to providing comments on the new bridge to FHWA at the DEIS and Supplemental DEIS stage reviews, the Commission had another opportunity to review the bridge design during an informational briefing at its meeting on October 1, 1998. Prior to that meeting, the staff met with FHWA and its consultants on September 4, 1998. The staff reiterated its concern that the bridge design reflect a “Gateway” to the Nation’s Capital. In addition to being well-designed, the structure should enhance the visual quality of the Potomac River scenic corridor and minimize adverse effects on aquatic life and effects on federal lands, such as Jones Point Park and the Mount Vernon Memorial Parkway (section of the George Washington Memorial Parkway). Finally, FHWA should continue its extensive coordination with all interested parties.

EVALUATION

The Federal Highway Administration is commended for producing a bridge design that is sensitive to the natural setting of the Potomac River scenic corridor. They have invested over eight years of planning and environmental studies and have conducted a systematic, deliberative design process that has involved the extensive participation of federal, state, and local, and community, special interest groups.

The resulting design concept of V-shaped piers in the form of arches produces the desired arch appearance reminiscent of other Washington “Gateway” bridges. The most notable is the Francis Scott Key Bridge. Combined with its low profile, only 20 feet taller than the existing bridge, this new bridge preserves the natural setting of the Potomac River by opening itself up to river views and providing natural light to shine through the bridge. This is especially important as the bridge spans over Jones Point Park. This pattern of repeated, continuous arch piers conveys a slender bridge profile that is aesthetically pleasing to the eye.

Finally, the proposed bridge design is consistent with applicable policies in the Commission-adopted Comprehensive Plan and explicit design goals stipulated in the approved Section 106 MOA. Federal interests have been protected and preserved with

this design. This finding was determined by visual analysis from and within Jones Point Park, Rosalie Island, Oxon Hill Children's Farm in the area of I-295, Belle Haven near George Washington Memorial Parkway, and other river viewsheds. For all these reasons, staff recommends that the Commission approve the design concept for a replacement bridge for the Wilson Bridge.

In the further refinement of the bridge design plans, which will be expressed in preliminary plans to the Commission in late summer or early fall, FHWA will continue to work with staff to provide more detailed information and illustrative drawings for the following aspects of the bridge project:

- A night lighting scheme that shows lighting of the V-shape piers, the roadway deck, and the space underneath the bridge at Jones Point Park, as viewed from the Virginia and Maryland shores and the Nation's Capital. Views of the bridge at night can potentially be seen from the Truman balcony of the White House. These night lighting views of the bridge could be expressed with the use of computer-aided design techniques. Staff is available for consultation with FHWA.
- Texture and color of the exterior finish of the bridge Include: the piers; the roadway deck and furniture, including railings, light fixtures, and signage; the bridge control tower; and underneath the bridge and its abutments at Jones Point Park and Rosalie Island. The texture and color of the surface material of the bridge, as well as the bridge furniture, contribute to the overall visual effect of the bridge.
- Detailed design plans of the: railings, light fixtures, and signage on the roadway deck; landscape at the bridge abutment areas at Jones Point Park and Rosalie Island; the bridge control tower; the pedestrian/bicycle pathway along the bridge and its linkage or connections to trails or paths in Virginia (Mount Vernon Memorial Parkway) and Maryland (Potomac Heritage Trail and proposed National Harbor); and the potential noise barriers at each end of the bridge.

The Final EIS addressed and analyzed potential noise impacts from projected bridge traffic. Although it is our understanding that the proposed bridge will exhibit lower noise levels generated by travelling vehicles when compared to the existing bridge, the Final EIS still investigated the feasibility of constructing noise barriers. The potential construction of these noise barriers is one of the noise abatement measures identified in the Final EIS. If installed, these barriers could be 10 or 12 feet high and strategically placed near the shoulder of the road at both ends of the bridge. Because these potential noise barriers could be visible in the approaches to the bridge and possibly affect the "Gateway" image of the bridge, staff recommends that FHWA provide detailed designs of the potential barriers and their locations.

Also, equally important is that the FHWA conduct a noise analysis of the proposed bridge that addresses noise impacts generated by steel box girders. Although the Final EIS satisfactorily investigated noise impacts for each of the bridge alternatives, it did not specifically examine the noise impacts of a bridge structure consisting of steel box

girders. In addition, because of the proposed material, the analysis should address the issue of possible “resonance” or reverberation surrounding and below the bridge.

Finally, to ensure completeness in the overall design of the gateway approaches to the bridge, staff recommends that prior to completion of final bridge designs, FHWA submit specific design plans for Jones Point Park, including the overpass urban deck at Washington Street (GWMP) and Queen Anne’s Park at Rosalie Island, the Beltway overpass deck. Appropriate park designs at the bridge entrances should help to reduce or soften the scale of the bridge and, therefore promote and enhance desired qualities of a “Gateway” bridge into the Nation’s Capital. FHWA should develop these plans in cooperation with the City of Alexandria, Prince George’s County, and National Park Service officials.

COORDINATION

Coordinating Committee

The Coordinating Committee reviewed this item at its meeting on March 10, 1999, and forwarded the proposal to the Commission with the statement that the project has been coordinated with all agencies present. The participating agencies were NCPC; the District of Columbia Office of Planning; the Fire Department; the Department of Housing and Community Development; the General Services Administration; the National Park Service; and the Washington Metropolitan Area Transit Authority.

CONFORMANCE

Comprehensive Plan

At the design concept stage, the proposed replacement bridge would affect the Potomac shoreline and floodplain, wetlands, ambient noise levels and would generate spoil materials. Policies in the Environment Element of the Comprehensive Plan applicable to these impacts specify:

- If construction in a Floodplain is necessary, (1) the site should be returned as close as possible to its natural contours; (2) Floodplain fill should be minimized; (3) grading requirements should be minimized; and (4) free natural drainage should be preserved.
- ...Land uses adjacent to Wetlands should be compatible with the preservation of natural resources supported by the Wetlands.
- Highway development design should be sensitive to existing and proposed adjacent land uses and should employ the use of barrier attenuations, where necessary.

- Spoil materials generated during construction of Federal and non-Federal facilities should be re-used, where possible, on site. If the materials are disposed of elsewhere, it should be done in accordance with local regulations.

Policies contained in the Parks, Open Space and Natural Features Element apply to shoreline protection and the preservation and enhancement of river views and state:

- Natural shoreline areas in the National Capital Open Space System should be retained in their natural condition or be appropriately landscaped for a distance of 150 to 200 feet from the water's edge, if possible. Large paved parking areas and other non-water related development should be discouraged within the area.
- The Y-shaped composition of open water spaces created by the confluence of the Potomac and Anacostia Rivers in the L'Enfant City and its environments should be treated as an urban river setting. Development in this area should preserve and enhance the variety of views and vistas proposed in the L'Enfant and McMillan Plans, respect the grand scale of the river landscape, and allow for the appreciation of the extensive areas of water landscape. Docking areas and waterfront buildings should be integrated with the generally low and continuous line of river embankments.

The Oxon Hill Children's Farm in Prince George's County and Bellehaven Park on the Virginia side of the Potomac River are located in the vicinity of the proposed bridges and their river views would be affected.

The proposed bridge would require easements for construction on Jones Point Park, Rosalie Island, the Mount Vernon Memorial Highway, and on some of the land for the Potomac Heritage Trail. Jones Point Park and Rosalie Island are federally owned and are designated for Natural Park use in the Comprehensive Plan. The Mount Vernon Memorial Highway is a designated national landmark, a Gateway to the Nation's Capital and is part of the George Washington Memorial Parkway. The following additional policies from the Parks, Open Space and Natural Features Element apply:

- Natural Parks...should be established, protected, and maintained to insure the conservation and enhancement of the significant features of the National Capital.
- The George Washington Memorial Parkway should be maintained as a scenic corridor which not only serves as a spectacular Gateway artery to the Nation's Capital, but which also preserves its important historic associations. Its scenic, historic, and recreational aspects should be emphasized and protected, even at the expense of its traffic-carrying role.
- The proposed Potomac Heritage Trail, to be part of the National Trail System extending from the Chesapeake Bay to the Appalachian Trail north of the Region and

beyond, should be developed, using the existing and proposed trails within the National Capital Open Space System as much as possible.

Two additional policies in this element relating to bridge design and the protection and enhancement of Gateways also apply:

- Bridges over rivers and streams should be designed to retain the natural continuity of waterways, shorelines and valleys. Whenever possible, bridges and their approaches should enhance the sense of arrival, gateway or transitional qualities inherent in river crossings.
- Roadways in the Interstate Highway System are important Gateways used by Visitors and should be maintained in a manner which protects and enhances their landscape character and quality, gives attention to scenic views from the road, and provides informative signs to assist Visitors. Advertising signs and bordering development should be carefully controlled to avoid adverse visual impacts.

The bridge proposal would also require an easement for construction in the Alexandria Historic District. An applicable policy the Preservation and Historic Features Element specifies:

- New construction on Historic Landmarks or in Historic Districts should be compatible with the historical architectural character and cultural heritage of the landmark or districts. In design, height, proportion, mass, configuration, building materials, texture, color and location, new construction should complement these valuable features of the landmark or district, particularly features in the immediate vicinity to which the new construction will be visually related.

National Historic Preservation Act

FHWA served as the lead federal agency for the purposes of Section 106 review under the National Historic Preservation Act (NHPA). A Memorandum of Agreement was executed on November 5, 1997 among the parties, following the circulation of a draft MOA for comment. The resources include cultural and historic properties on both sides of the river. The Virginia, Maryland and District of Columbia State Historic Preservation Officers were consulted, as was the Advisory Council on Historic Preservation, the National Park Service, and local and national historic preservation interest groups. FHWA has concluded its compliance responsibilities under NHPA.

The MOA provides for:

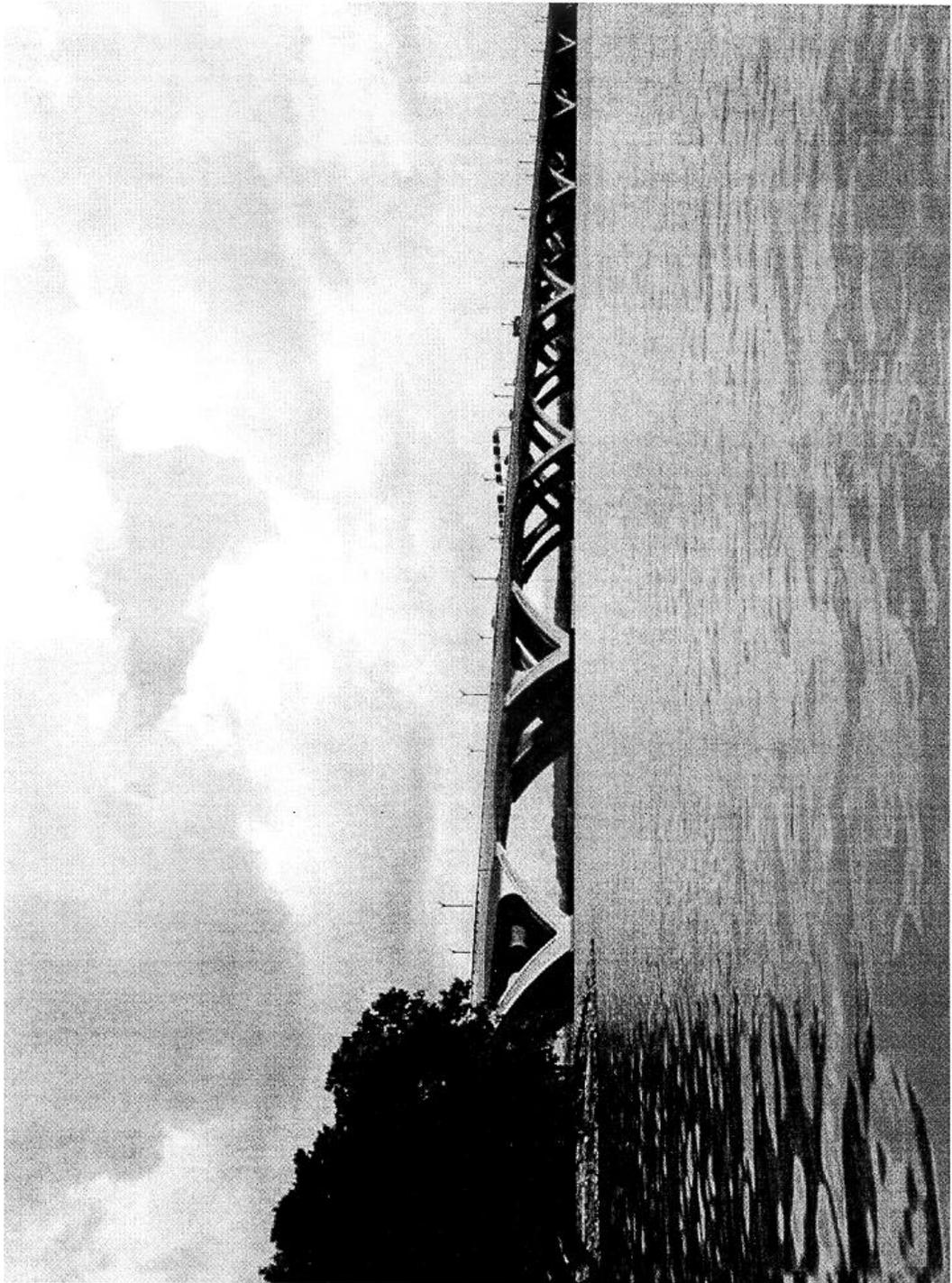
- Additional review of the design at specified stages to ensure that consultation continues as elements affecting historic resources are developed. Further consultation would take place in the event that additional effects to eligible historic properties were determined during implementation.

- Establishment of a Design Review Working Group, to be chaired by the Advisory Council on Historic Preservation and including representatives from the City of Alexandria, the National Park Service, M-NCPPC, Prince George's County, the Virginia SHPO, and the Maryland SHPO.

National Environmental Policy Act

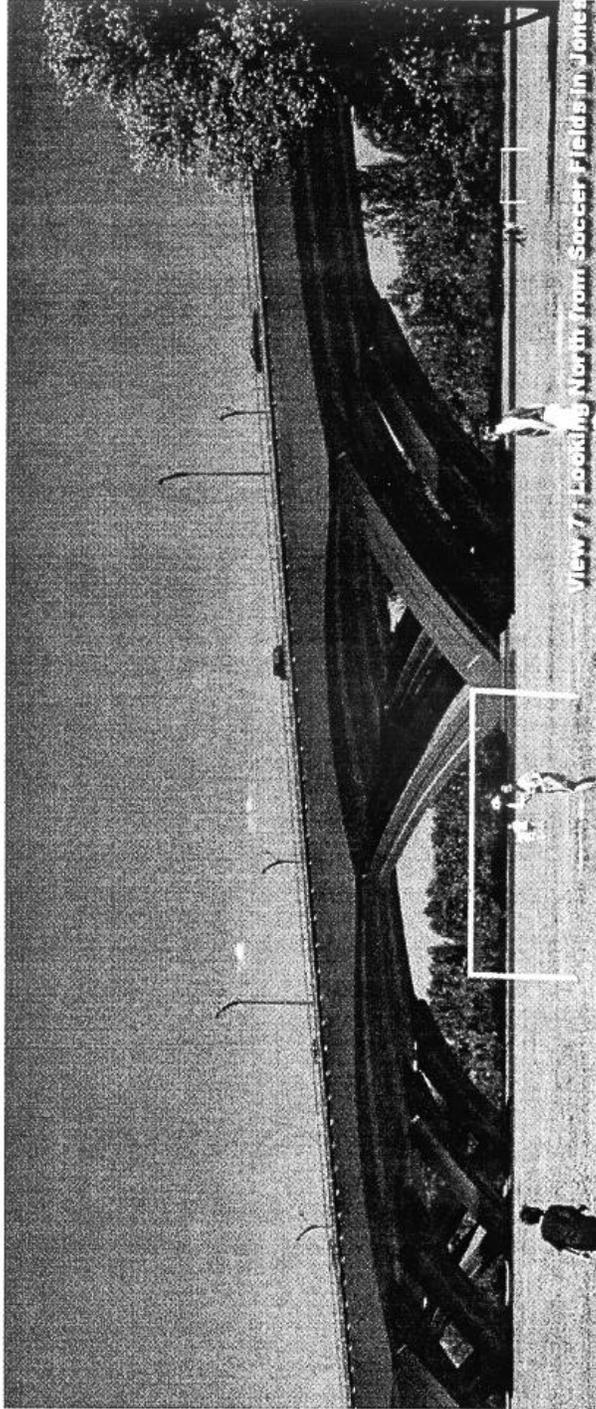
The FHWA in cooperation with the District of Columbia Department of Public Works, the Maryland State Highway Administration, and the Virginia Department of Transportation prepared a final Environmental Impact Statement in compliance with the requirements of the National Environmental Policy Act (NEPA) in August of 1997. A Record of Decision on that document was completed in November 1997 and identified several specific design measures and mitigative actions which the FHWA would implement in completing the project. The selected alternative identified in the ROD is the 4A alternative titled, "current alignment/side-by-side drawbridges." The concept submission is a further refinement of the selected alternative.

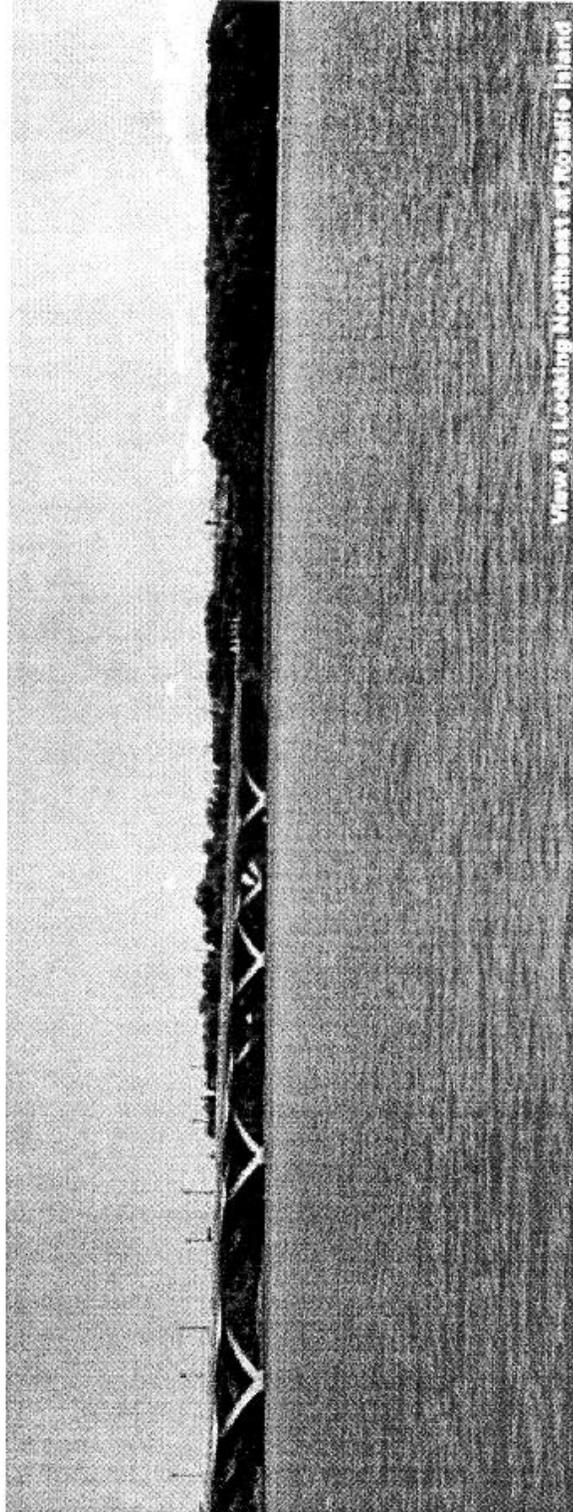




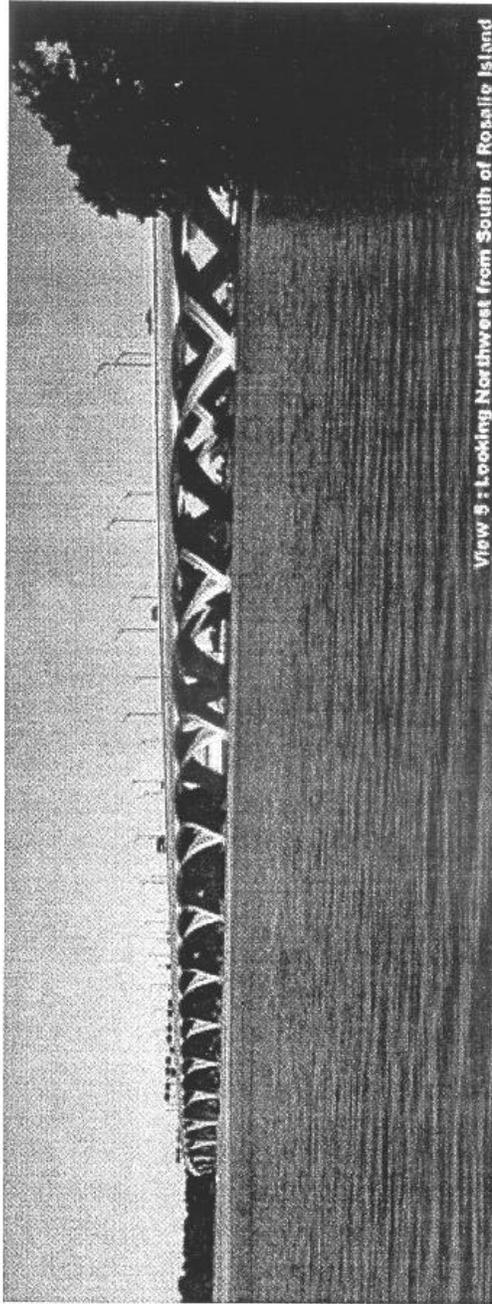
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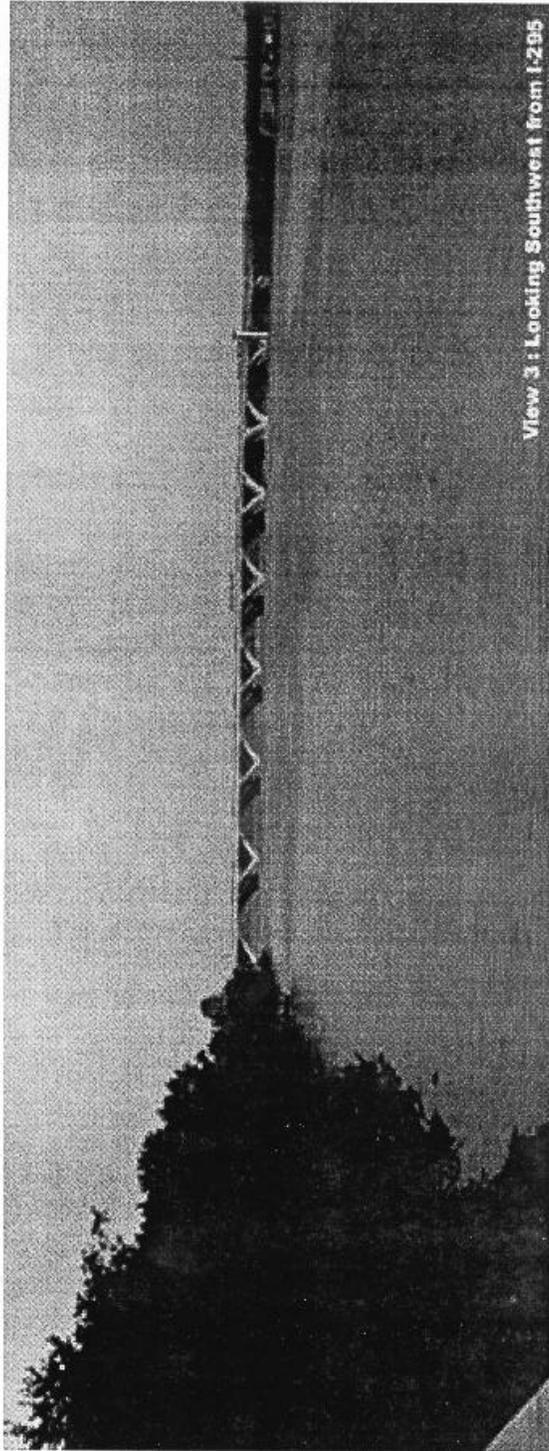




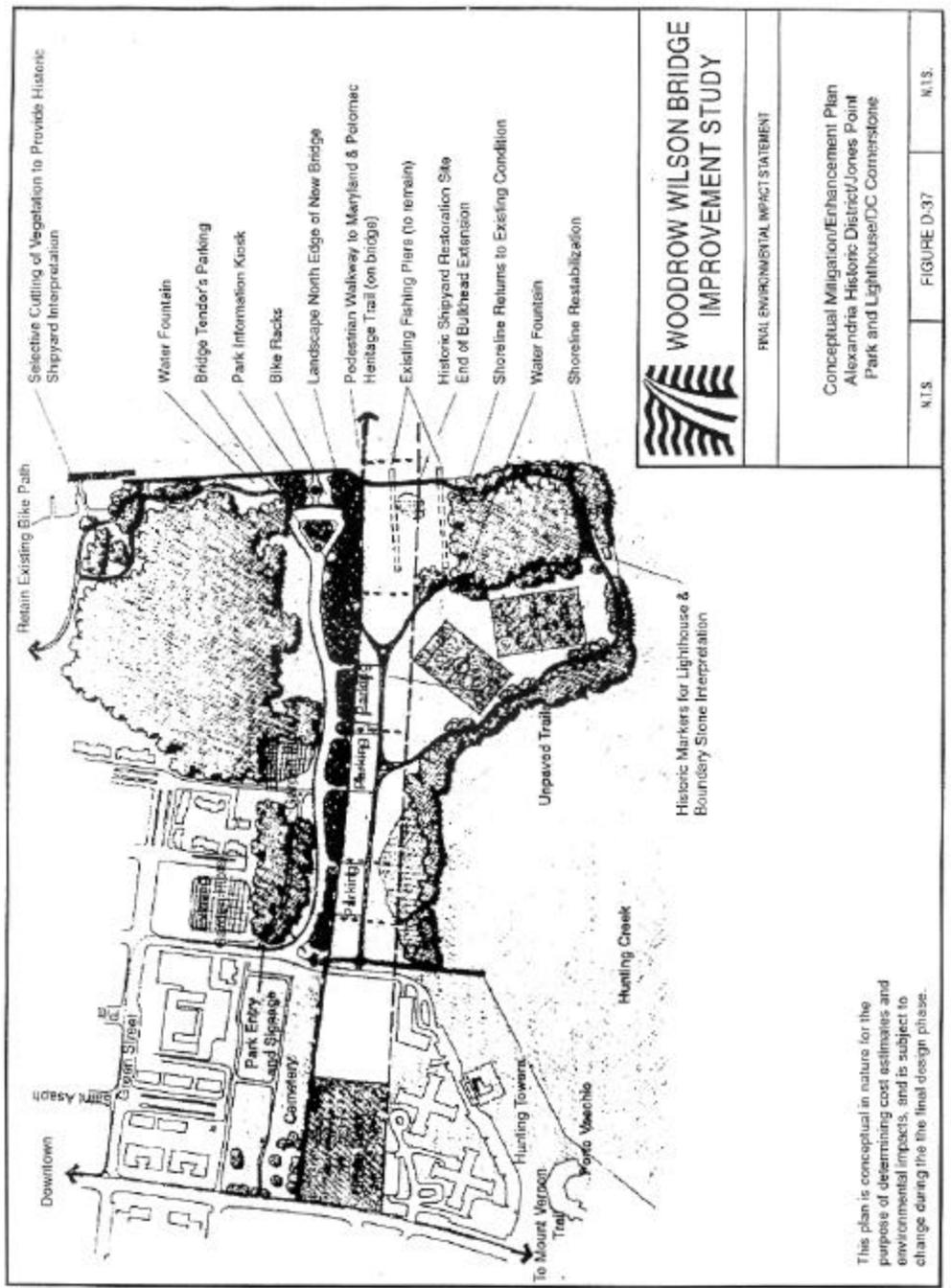
View 8 : Looking Northeast at Moultrie Island



View 9 : Looking Northwest from South of Rosalie Island



View 3 : Locking Southwest from I-295



WOODROW WILSON BRIDGE IMPROVEMENT STUDY

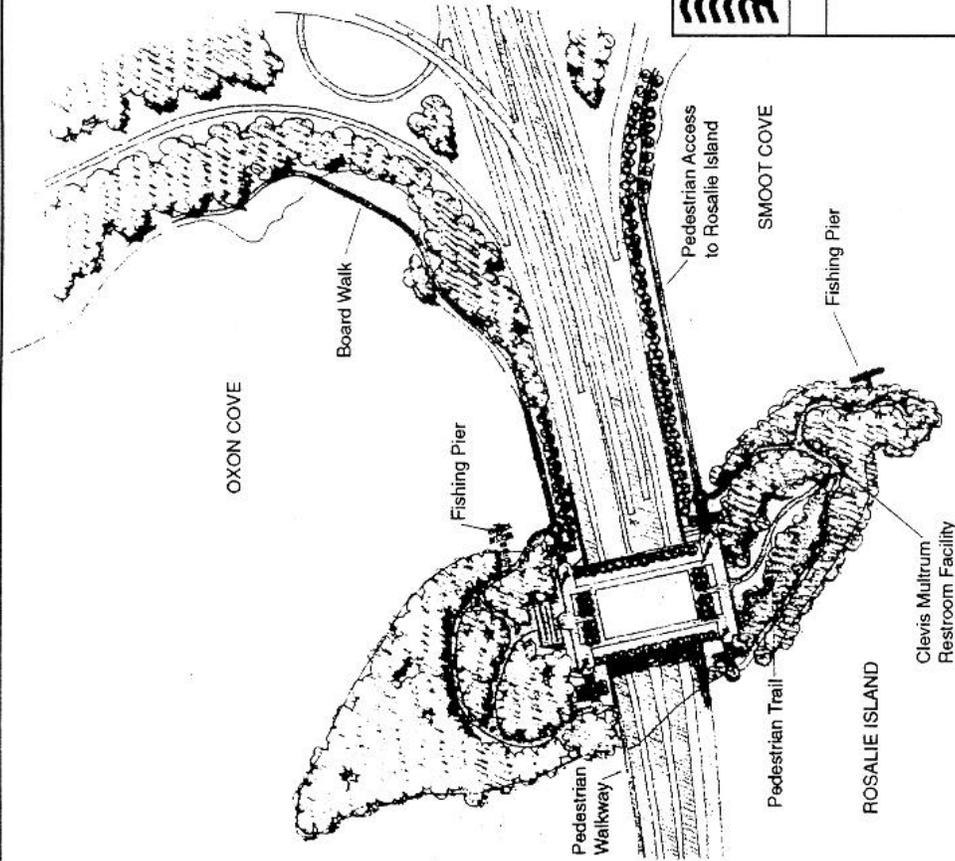
FINAL ENVIRONMENTAL IMPACT STATEMENT

Conceptual Mitigation/Enhancement Plan
Alexandria Historic District/Jones Point
Park and Lighthouse/DC Cornerstone

N.T.S. FIGURE D-37 N.T.S.

This plan is conceptual in nature for the purpose of determining cost estimates and environmental impacts, and is subject to change during the final design phase.

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WOODROW WILSON BRIDGE IMPROVEMENT STUDY

FINAL ENVIRONMENTAL IMPACT STATEMENT

Conceptual Mitigation Plan
Queen Anne's Park (Future)

N.T.S.

FIGURE D-39

N.T.S.