

# **The Design Project**

## **Bridge Design Competition**

*Replacement of the Woodrow Wilson Memorial Bridge  
Washington, D.C.*

Northeastern University  
Civil and Environmental Engineering Department  
(NU-CEED)

**Senior Design Project  
CIVU769**

Spring Semester 2004

*(Instructor: Prof. M. K. Yegian)*

**Bridge Design Competition**

*Replacement of the Woodrow Wilson Memorial Bridge  
Washington, D.C.*



**Existing Woodrow Wilson Memorial Bridge**

**Design Criteria and Geotechnical Information**

**January 6, 2004**

# **Competition for a Preliminary Design of a Bridge To Replace the Existing Woodrow Wilson Memorial Bridge Washington, D.C.**

## **1. Bridge Design Competition**

The Northeastern University Civil and Environmental Engineering Department (NU-CEED) hereafter referred to, as the Client will hold a design competition for the replacement of the existing Woodrow Wilson Memorial Bridge over the Potomac River in Washington, D.C.

The New Woodrow Wilson Memorial Bridge will be 12-lane structure, approximately 6000 feet long. The westbound and eastbound 6-lane structures each will be identical and independent from each other.

The goal of the competition is to select a *preliminary design* that best meets the needs of all stakeholders with respect to esthetics, functionality, constructibility, and cost.

## **2. Information Provided**

The location maps of the bridge are provided in Appendix 1. The design criteria that must be followed in the preliminary design of the Bridge are provided in Appendix 2. In Appendix 3. The geologic and geotechnical site conditions and soil properties are provided.

If an entrant needs additional information, please address your request to:

Dr. M. K. Yegian,  
Chair, Bridge Design Competition Review Board (BDCRB)  
401 Snell Engineering Center

## **3. Comprehensive Report**

Each entrant should provide a comprehensive report and drawings that describe:

1. Analysis of the Client's needs.
2. Formulation of design alternatives.
3. Proposed bridge design concept.
4. Preliminary engineering design of the bridge super- and sub-structure.
5. Preliminary engineering design of the bridge foundations.
6. Estimated cost, and construction sequence and method.

#### **4. Presentation of Proposed Design**

Each entrant will be invited to make a presentation of its proposed design to the Bridge Design Competition Review Board (BDCRB) consisting of bridge experts and stakeholders.

#### **5. Selection of Winning Team**

The winning team will be selected by the BDCRB based on the following criteria:

##### ***1. Final Report (60 Points)***

- 1.1 Analysis of the Client's needs.
- 1.2 Formulation of design alternatives.
- 1.3 Proposed bridge design concept.
- 1.4 Esthetics in the proposed design.
- 1.5 Preliminary engineering design of the bridge foundations.
- 1.6 Preliminary engineering design of the bridge super- and sub-structure.
- 1.7 Estimated cost, and construction sequence and method.
- 1.8 Quality of the report presentation, drawings, and illustrations.

##### ***2. Final Presentation (40 Points)***

- 2.1 Presentation of Client's needs
- 2.2 Proposed design concept.
- 2.3 Supporting analysis results and visuals.
- 2.4 Communication of technical content.
- 2.5 General oral presentation.
- 2.6 General technical competence of the team.

**Appendix 1. Location Maps of the Proposed Bridge.**

**Appendix 2. Design Criteria for the Proposed Bridge.**

**Appendix 3. Geologic and Geotechnical Site Conditions and Soil Properties.**