

# Project Profile

War Memorial, 750 N. Lincoln Memorial Dr., Milwaukee, WI



*The Existing Site* consisted of a flagpole on an existing Wisconsin DOT bridge structure adjacent to War Memorial Museum in Milwaukee.

*The existing flagpole was located on the bridge deck. Only partial drawings were available for the existing bridge structure. The existing flagpole base was limited in size and required complete modification for new flagpole installation.*



*The new flagpole structure* is a 60' high stealth monopole with RF transparent materials in the shaft.

*The new flagpole was located at the same location of the existing flagpole, but significant changes were made to the base, mostly underneath the bridge deck. The equipment was located underneath the bridge deck, completely away from public view.*

## Objective:

Client needed a site in this area with tough zoning and surroundings consisting of landmark buildings and museums. The objective was to provide a stealth installation by replacing an existing flagpole with a new flagpole with RF transparent mast and provision for collocation.

## Design Challenges, Solutions and Features:

Right from the beginning of the project, aesthetics was one of the main criteria for the design of this site. The owner wanted a site that looked similar to the existing flagpole and a suitable fit in the surrounding museum campus.

KCS Corporation started the preliminary design with evaluation of the existing flagpole loads and anchorage. Since the proposed flagpole was taller than the existing flagpole and it had a different size base plate, a new base for the flagpole had to be designed. KCS Corp. performed field measurements of existing base and performed structural analysis with the new loads.

The existing base was connected to bridge diaphragm spanning two precast post-tensioned highway girders. Therefore, anchorage into existing girders was ruled out in order to avoid any chance of damaging existing post-tensioning cables. A mechanical system was developed in such a way that it incorporated existing bridge diaphragm while distributing new loads further on the existing girders. The new base also included conduits for running coax for future carrier. The equipment area was located underneath the bridge structure with the utilities supplied from the War Memorial Museum. The equipment was located on a concrete slab on grade.

To assure proper fitment of flagpole and the base on existing bridge substructure, a complete formwork was prepared in shop. KCS Corporation reviewed the formwork and concrete details prior to placement and provided engineering support during construction.

The final design consisted of all necessary details for the construction of flagpole base, equipment plans and installation details, and coax installation details. The permit was approved without any comments from the City and the site was constructed and commissioned as scheduled.



**KCS CORPORATION**