

# Refined Alternatives for the Goethals Bridge Replacement Environmental Impact Statement

The purpose of this document is to explain the process through which the alternatives in the Goethals Bridge Replacement Environmental Impact Statement (GBR EIS) have been selected and refined.

Based on the Project's alternatives screening process, as well as comments received during outreach meetings held in June 2006, four bridge-replacement alternatives were selected for detailed evaluation in the Draft Environmental Impact Statement (DEIS) for the Goethals Bridge Replacement (endnoted below)<sup>i</sup>. During the course of presenting the results of the alternatives screening process to stakeholders as part of the agency coordination and public outreach program associated with preparation of the GBR EIS, the GBR Study Team obtained critical input that triggered necessary refinements to the four build alternatives' design concepts. The driving force behind the refined design concept of the four alternatives is related to the proposed bridge tower height in relation to aviation height clearances. The Goethals Bridge is located approximately 3 miles from the southern boundary of Newark Liberty International Airport. Given this proximity, the Port Authority of New York and New Jersey (Port Authority), the project sponsor submitted a completed Form 7460 (Notice of Construction or Alteration) to the Federal Aviation Administration (FAA) for review. In response to this form, the FAA, which is a member of the GBR EIS Technical Advisory Committee (TAC), identified a potential concern with the 350-foot high towers above mean sea level (MSL) originally proposed for the replacement bridge. The Port Authority then conducted its own aeronautical studies and held further discussions with FAA and representatives of the airlines operating at the airport to ascertain a tower height for the replacement bridge that would not pose a hazard to aviation height clearances.

As a result of the Port Authority's aeronautical studies and consultation process with the FAA and airport stakeholders, a maximum tower height of 272 feet above MSL was established for the proposed Goethals Bridge Replacement to avoid conflict with flight departures from the airport. This decrease of 78 feet from the originally proposed maximum tower height of 350 feet above MSL required a major redesign of the proposed bridge-replacement alternatives' main span towers.

The design studies that were undertaken to address the effects of the tower height decrease on the original bridge-replacement designs confirmed that the originally-proposed cable-stayed design concept is the most efficient bridge type, given the physical and aesthetic characteristics of the Goethals Bridge study area. However, the 272-foot maximum tower height required refinements to the bridge-replacement alternatives' alignments, principally due to changes in tower design and roadway clearance interferences with the lowered angle of the cable stays. The new design studies, while still conceptual, further determined that a single bridge configuration containing two decks separated by a set of bridge towers would be suitable for the alignments of all four bridge-replacement alternatives, instead of the two separate design concepts that had been advanced during the GBR EIS alternatives screening process (i.e., single replacement bridge south or north of the existing bridge's alignment, and twin replacement bridges within and directly south or north of the existing bridge's alignment). Therefore, the twin replacement-bridge alternatives north and south of the existing Goethals Bridge are no longer under consideration.

The four alternative alignments associated with the refined bridge-replacement configuration are conceptually the same as the four bridge-replacement alternatives that were recommended for more detailed study at the end of the GBR EIS alternatives screening process. However, since the refined alternatives all include a single, modified design concept instead of the two separate design concepts

originally studied in the alternatives screening process, the nomenclature of the four refined alternatives has been modified from those of the original alternatives studied. Listed below in italics are the names of the four refined alternatives, as used in the main body of the DEIS, while the names of the four respective original alternatives, as used in this report, are provided in parentheses:

- *New Alignment South Alternative* - a single-span bridge replacement in an alignment directly south of the existing Goethals Bridge (originally 6-Lane Replacement Bridge – South);
- *New Alignment North Alternative* - a single-span bridge replacement in an alignment directly north of the existing Goethals Bridge (originally 6-Lane Replacement Bridge – North);
- *Existing Alignment South Alternative* – a single-span bridge replacement in an alignment within and extending south of the existing Goethals Bridge alignment (originally Twin Replacement Bridges – South); and
- *Existing Alignment North Alternative* - a single-span bridge replacement in an alignment within and extending north of the existing Goethals Bridge alignment (originally Twin Replacement Bridges – North).

While the conceptual bridge-replacement design and alignments have necessarily been refined to address the reduction in allowable maximum tower height, they remain consistent with the intent and general locations of the four bridge-replacement alternatives advanced from the screening process for detailed evaluation in the GBR EIS. Similar to the original conclusion of the alternatives screening process (i.e., that all four alternatives would be advanced for analysis in the DEIS), it is recommended that all four refined alternatives be advanced for analysis in the DEIS as well.

Following the design studies to refine the four conceptual bridge-replacement alternatives, the refinements were presented to and discussed with the Project's Technical Advisory Committee (TAC) and Environmental Task Force (ETF) in September 2007 at a meeting scheduled specifically for this purpose. Both the TAC and ETF had been involved in the review of the alternatives screening process, results, conclusions, and recommendations of the original bridge-replacement alternatives. The meeting with the TAC and ETF regarding the refined alternatives included discussion of the underlying airport-related constraints to the previously assumed maximum tower height and associated design concept modifications; comparison of the refined alternatives' alignments to the alignments of the four original bridge-replacement alternatives via visual displays of overlay mapping of the original and corresponding refined alignments; and the screening results for the four refined alternatives using the same basic criteria and evaluation measures as were previously used in the alternatives screening process. See link to the [Presentation](#) for more details.

With the input received from the TAC and ETF review of the refined alternatives, the U.S. Coast Guard, as lead federal agency for preparation of the GBR EIS, has concluded that the refined alternatives are consistent with the recommendations of the alternatives screening process and appropriate for continued evaluation of the proposed project's potential social, economic and environmental impacts, which is being documented in the main body of the GBR EIS.

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<sup>i</sup> The four alternatives selected and presented at that time included the following:

- Single 6-Lane Replacement Bridge - North
- Single 6-Lane Replacement Bridge - South

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For both the North and South Single 6-Lane Replacement Bridge - A new bridge would be designed and constructed north/south of and roughly parallel to the existing structure, and the existing Goethals Bridge would be demolished. The new 6-lane bridge would provide 12-foot-wide lanes, three in each direction, a 12-foot-wide right shoulder, and a 5-foot-wide left shoulder in each direction. In addition to the vehicular travel lanes, the overall cross-section would include a 10-foot-wide sidewalk/bikeway (along the north fascia of the westbound lanes) and adequate width to accommodate potential future transit service (between the two directions of travel).

- Twin Parallel Replacement Bridges - North
- Twin Parallel Replacement Bridges - South

For both the North and South Twin Parallel Replacement Bridges - Two 3-lane replacement bridges would be designed and constructed, one north/south of and roughly parallel to the existing structure to serve westbound traffic, and the second in the right-of-way (ROW) of the existing Goethals Bridge to serve eastbound traffic. The westbound bridge would be constructed first, followed by demolition of the existing structure and then construction of the eastbound bridge. Each of the bridges would provide 12-foot-wide lanes and 12- and 5-foot-wide right and left shoulders, respectively. The westbound bridge would also include a 10-foot-wide walkway/bikeway (along the north fascia), and adequate space would be provided between the two bridges to accommodate potential future transit service.