Appendix E.5
Historic Resources Effects Assessment

GOETHALS BRIDGE REPLACEMENT

STATEN ISLAND, RICHMOND COUNTY, NEW YORK
AND
THE CITY OF ELIZABETH, UNION COUNTY, NEW JERSEY

HISTORIC RESOURCES
EFFECTS ASSESSMENT

Prepared for:
The United States Coast Guard

United States Coast Guard
U.S. Department of Homeland Security

Project Applicant:
The Port Authority of New York and New Jersey

THE PORT AUTHORITY OF NY & NJ

Prepared by:
The Louis Berger Group, Inc./Parsons Brinkerhoff JV

July 2008

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Kristofer Beadenkopf

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MANAGEMENT SUMMARY

SHPO Project Review Number: NYSOPRHP # 04PR03162; NJHPO # I 2007-225

Involved State and Federal Agencies: Port Authority of New York and New Jersey (PANYNJ)
United States Coast Guard (USCG)

Phase of Survey: Historic Resources Effects Assessment

Location Information

Location: Goethals Bridge Corridor spanning the Arthur Kill beginning near the convergence of the east and west lanes of I-278 at Route 440 in Staten Island, New York, and extending to Mattano Park in Elizabeth, New Jersey

Minor Civil Division: Staten Island, New York; Elizabeth, New Jersey
County: Richmond County, New York; Union County, New Jersey

Survey Area

Length: N/A
Width: N/A
Depth: N/A
Number of Acres Surveyed: N/A
Number of Square Meters & Feet Excavated (Phase II, Phase III only): N/A
Percentage of the Site Excavated (Phase II, Phase III only): N/A

USGS 7.5 Minute Quadrangle Map(s): Elizabeth, NJ-NY; Arthur Kill, NY-NJ

Archaeological Survey Overview: N/A

Results of Archaeological Survey: N/A

Results of Architectural Survey

Number of buildings/structures/cemeteries within project area: 89
Number of buildings/structures/cemeteries adjacent to project area: 0
Number of previously determined NR listed or eligible buildings/structures/cemeteries/ districts: 6
Number of identified eligible buildings/structures/cemeteries/districts: 5

Report Author: Deborah Baldwin Van Steen
Kristofer Beadenkopf

Date of Report: July 2008

EXECUTIVE SUMMARY

This report presents an effects assessment of those historic cultural resources that are listed in or eligible for listing in the National Register of Historic Places. The effects assessment follows the results of the historic resource survey of the proposed Goethals Bridge project area.

As part of the Goethals Bridge Replacement Environmental Impact Statement (GBR EIS) for the United States Coast Guard (USCG), The Louis Berger Group, Inc. (Berger) undertook a historic resources survey and prepared documentation pursuant to the National Environmental Policy Act of 1969, as amended. The survey was conducted by Berger in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended. Field survey and historic research for the architectural resources investigations were completed in July and August 2006. The purpose of the survey was to: (1) identify historic properties previously listed or determined eligible for listing in the National Register of Historic Places within the project's area of potential effect (APE), (2) identify and document other, previously unidentified resources within the APE meeting the National Register's 50-year age or exceptional significance criteria, and (3) evaluate the National Register eligibility and provide eligibility recommendations for the previously unidentified historic resources. A revised Historic Architectural Survey of resources in New Jersey was conducted in October, November, and December 2007.

The Goethals Bridge, originally built in 1928, provides direct connection between Elizabeth, New Jersey, and Staten Island, New York. Part of the Port Authority's Interstate Transportation Network, the Goethals Bridge serves as one of the principal vehicular transportation arteries linking northern New Jersey and New York City. As a result of the architectural resources investigations conducted in the New York and New Jersey APEs, a total of 89 resources were either previously identified or evaluated as part of the current EIS process. Eleven of these resources are listed in or eligible for listing in the National Register of Historic Places. The effects of the proposed project on these 11 architectural resources have been evaluated in this report.

Based on the results of the effects assessment, Berger recommends that the proposed Goethals Bridge Replacement will adversely affect three resources within the archaeological APEs and architectural APEs, including the Goethals Bridge, the Staten Island Railroad Historic District, and the Staten Island Railway Lift Truss Bridge over Arthur Kill. Mitigation of this adverse effect will be conducted in consultation with the New York and New Jersey state historic preservation offices.

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1.0 INTRODUCTION AND PROJECT DESCRIPTION

The Port Authority of New York and New Jersey (PANYNJ) has proposed to erect a new span over the Arthur Kill to replace the existing Goethals Bridge linking Elizabeth, New Jersey, and Staten Island, New York. The Goethals Bridge is part of the Port Authority's Interstate Transportation Network and serves as a major link between northern New Jersey and New York City for vehicular traffic, along with the George Washington Bridge, the Holland and Lincoln Tunnels, the Outerbridge Crossing Bridge, and the Bayonne Bridge. The Goethals Bridge, built in 1928, is also considered a primary transportation route within the metropolitan area's Southern Corridor, connecting the New Jersey Turnpike (Interstate 95) and U.S. Routes 1 and 9 in New Jersey with Long Island, New York, via the Verrazano Narrows Bridge and the Staten Island Expressway (Interstate 278) roughly paralleling Staten Island's north shore.

This report summarizes the results of the historic resources effects assessment undertaken by The Louis Berger Group, Inc. (Berger), on behalf of the United States Coast Guard (USCG) as part of the Goethals Bridge Replacement Environmental Impact Statement (GBR EIS). The EIS for the Goethals Bridge Replacement project will be prepared pursuant to the National Environmental Policy Act of 1969, as amended, U.S.C § 4332(2)(C); Section 4(f) of the Department of Transportation Act of 1966, as amended, 49 U.S.C § 303; and Section 106 of the National Historic Preservation Act of 1966, as amended.

1.1 Purpose of Study

The *Goethals Bridge Replacement Historic Resources Effects Assessment* is being undertaken to determine the impact of the Goethals Bridge Replacement project on those properties within the Area of Potential Effect (APE) that are eligible for inclusion in or listed in the National Register of Historic Places. This report has been conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, the Advisory Council on Historic Preservation's guidelines implementing Section 106 (*Protection of Historic Properties*, 36 CFR 800), and the National Environmental Policy Act of 1969.

To accomplish this task, The Louis Berger Group, Inc. performed a documentary and cartographic review of the APE and identified previously documented properties and conducted historic resource evaluation of newly identified properties in the APE. In addition to documentary research, field visits and photo documentation were undertaken as required. Identification of historic properties was undertaken in consultation with the state historic preservation offices (SHPO): New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) and the New Jersey Historic Preservation Office (NJHPO).

1.2 Project Description and Setting

The proposed Goethals Bridge Replacement project will involve construction of a new bridge span over the Arthur Kill linking Union County, New Jersey, with Staten Island Borough, Richmond County, New York. The study area for the project encompasses approximately 1 square mile of industrial waterfront in New Jersey, principally in the City of Elizabeth with a smaller portion in the City of Linden, and nearly 2 square miles of less developed acreage in the northwestern portion of New York City's Staten Island Borough (Figure 1; Photo 1). Development on the New Jersey side of the Goethals Bridge study area is relatively dense and almost completely built out. The New Jersey Turnpike and a parallel railroad line divide the area into a predominantly industrial area on the east and a western section consisting mostly of residential and commercial uses and parkland. The existing Goethals Bridge approach (Interstate 278) further divides the area into a northern section and a southern section. The Staten Island portion of the study area is mostly undeveloped, although scattered transportation, utility, residential, and commercial uses are present.

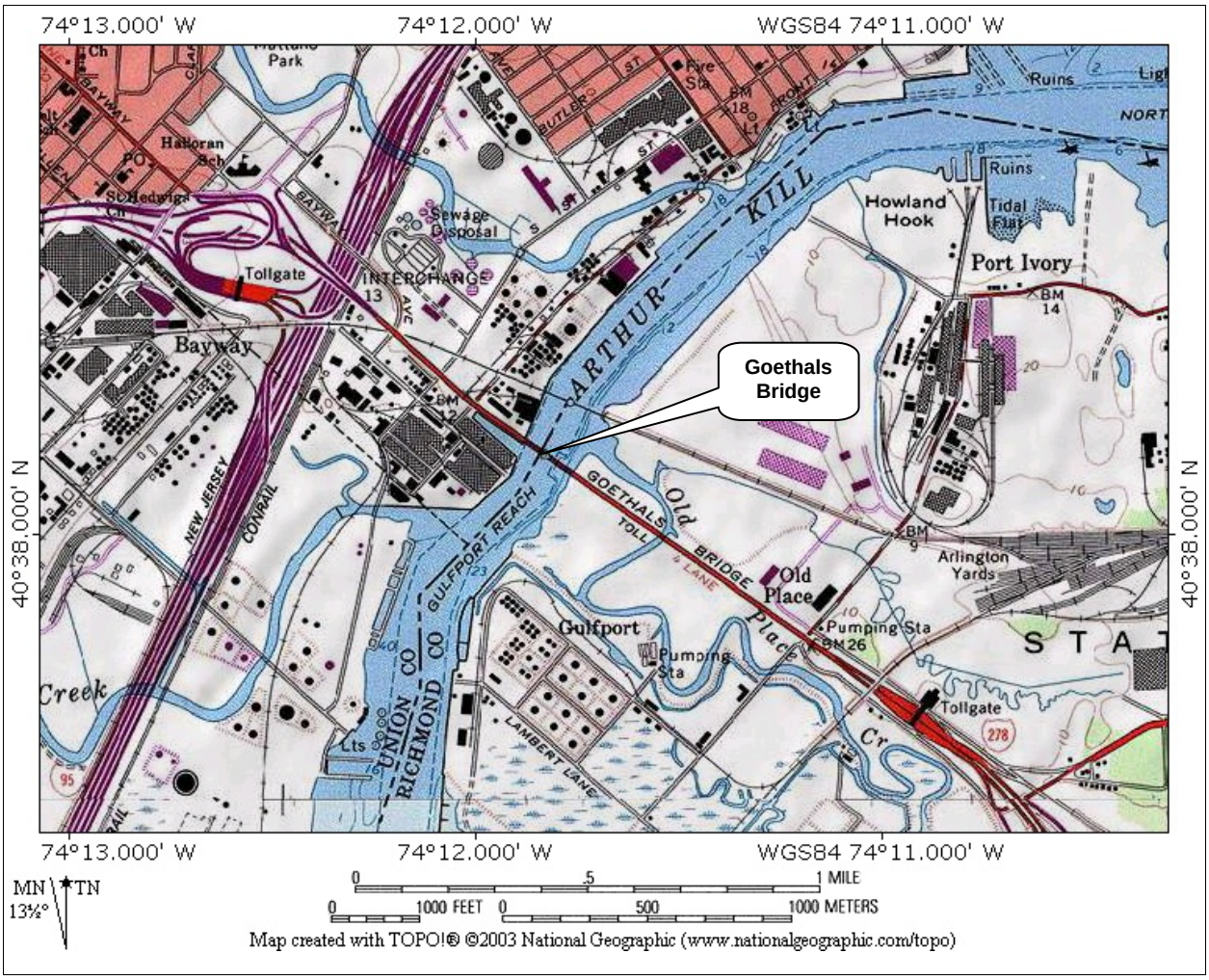


Figure 1: Overview of Goethals Bridge Replacement Project Location

Photo 1: Goethals Bridge 1991 View Southeast; Source: HAER NY-305, Photographer Jet Lowe

1.3 Proposed Alternatives

Several alternatives were reviewed during the alternatives screening process. The *Historic Bridge Alternatives Analysis for Goethals Bridge Replacement*, submitted to the NJHPO and the NYSOPRHP in February 2008, explored four preferred alternatives (Figures 2-5) (Berger 2008):

1. *New Alignment South Alternative* – a single bridge replacement in an alignment directly south of the existing Goethals Bridge;

2. *New Alignment North Alternative* – a single bridge replacement in an alignment directly north of the existing Goethals Bridge;

3. *Existing Alignment South Alternative* – a single bridge replacement in an alignment within and extending south of the existing Goethals Bridge alignment; and

4. *Existing Alignment North Alternative* – a single bridge replacement in an alignment within and extending north of the existing Goethals Bridge alignment.

1.4 Area of Potential Effect

The Area of Potential Effect (APE) is the area in which the Goethals Bridge Replacement project would be most likely to affect historic architectural resources. The APE includes the area that may be affected by direct physical impacts, such as demolition or alteration of a resource, or by indirect contextual impacts, such as changes in the visual character of the surrounding neighborhood or in the view from a resource. The potential effects of temporary project actions i.e., staging areas, construction noise, dust and vibration, were also considered in the determination of the APE.

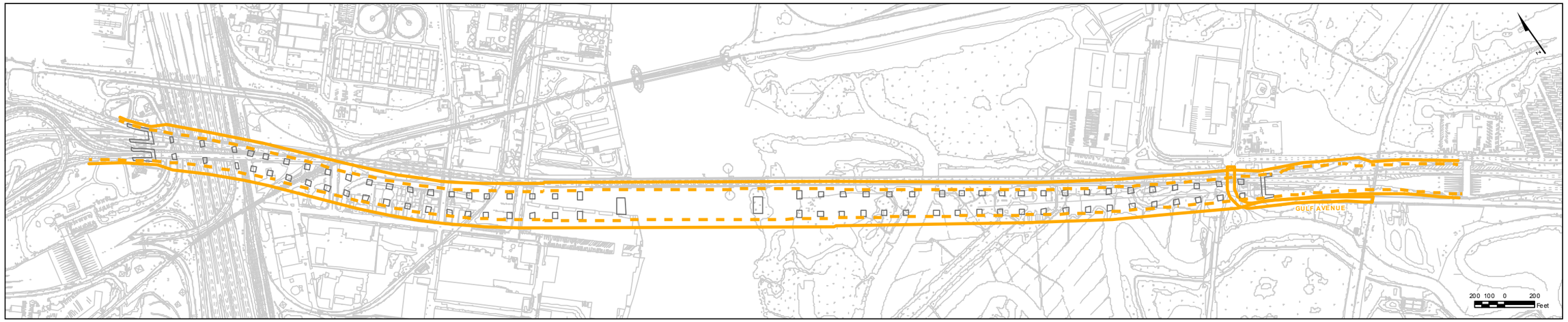
Based on the proposed alternatives and consideration of potential construction-related impacts and potential alterations to alternatives, the archaeological APE was defined as the area 500-feet north and 700-feet south from the centerline of the existing I-278 and Goethals Bridge extending west 500 feet from the edge of the overall footing of the interchange system of the New Jersey Turnpike in New Jersey and including the I-278 and West Shore Expressway (SR-440) Interchange in Staten Island as its eastern boundary (Figure 6).

The Area of Potential Effect for historic architectural resources was determined in consultation with the NJHPO and the NYSOPRHP (Figure 6). A previous study, the *Staten Island Bridges Program Final Environmental Impact Statement* (FEIS), utilized an APE for historic architecture consisting of a one-half mile corridor surrounding the proposed improvements to the Goethals Bridge). The APE for the current project also proposed a one-half mile corridor corresponding with the combined Primary and Secondary Study Areas (i.e., the Goethals Bridge Study Area) identified during the Draft Environmental Impact Statement (DEIS) scoping process. The APE was submitted to the NJHPO and the NYSOPRHP in June 2005 for review and concurrence as part of the Section 106 consultation process for the Goethals Bridge Replacement EIS. The NJHPO review of the APE determined that, owing to broader viewshed concerns, the use of a larger APE for historic architecture in New Jersey would be required. In October 2005 a field review of the Goethals Bridge Study Area and its environs was conducted to develop an appropriate APE that addressed the potential viewshed resulting from the proposed project. Following further consultation, a revised APE was submitted to the NJHPO on March 10, 2006. The revised APE considered the nature and scale of the proposed project, the existing built environment in which the project will occur, and the various ways in which the project could reasonably be demonstrated to affect historic properties.

The APE as determined for the investigations in New York consists of a one-half mile corridor surrounding the proposed improvements to the Goethals Bridge, and in New Jersey is bounded by the Arthur Kill on the east, the Elizabeth River and Mattano Park on the north, Clifton and Pulaski Streets on the west, New Jersey Turnpike Interchange 13 and associated ramps on the southwest, and Morses Creek on the south.

1.5 Project Personnel

Principal Architectural Historian Martha H. Bowers and Assistant Director Susan Grzybowski served as Project Managers for the historic resource investigations conducted in 2007. Architectural Historian Deborah Van Steen and Archaeologist Kristofer M. Beadenkopf, RPA, authored this report. Nicole Weiss assembled the report's graphics.



Legend

Alignments

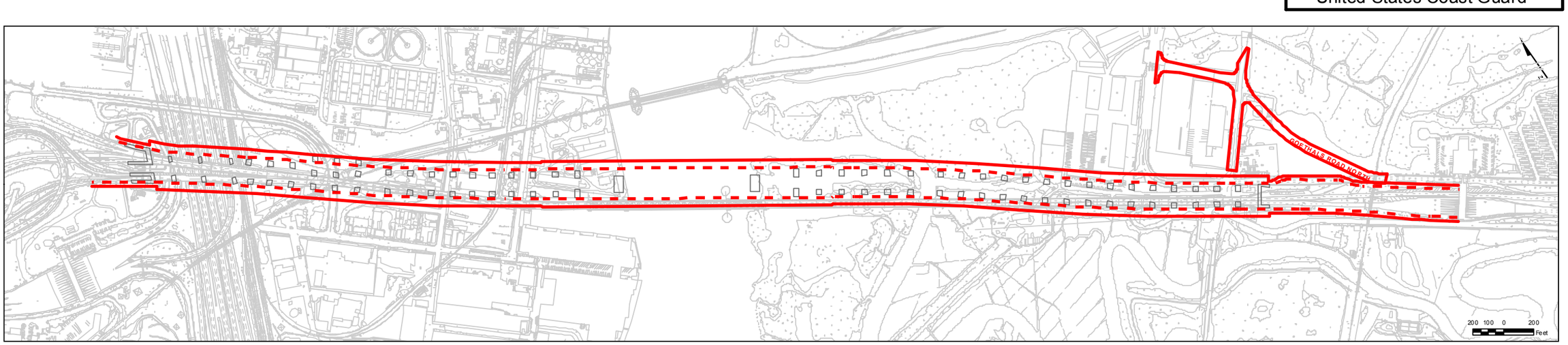
- Buffer / Right - of - Way - New Alignment South
- Edge of Structure - New Alignment South

Bridge Structures

- Pier/Tower

New Alignment South

Goethals Bridge Replacement EIS
Figure 2
New Alignment South
United States Coast Guard



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Alignment

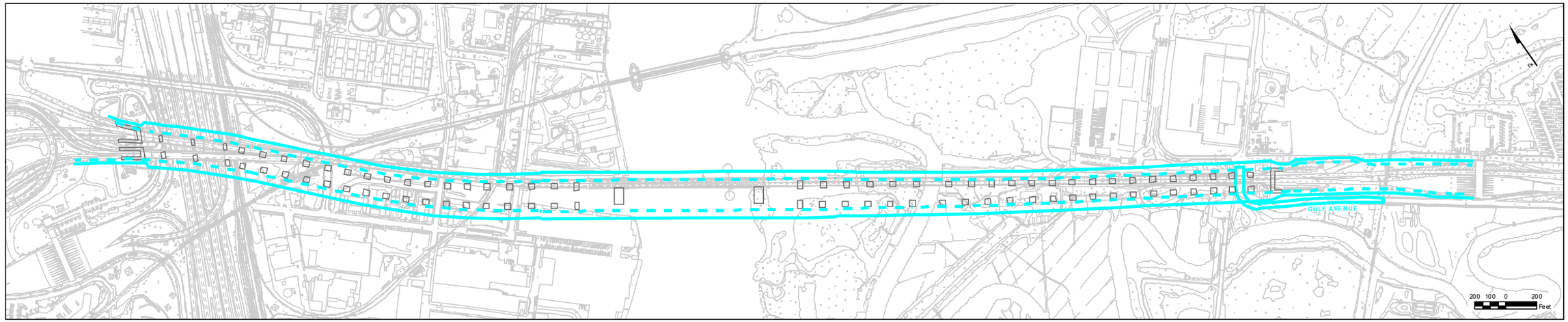
- Buffer / Right - of - Way - New Alignment North
- Edge of Structure - New Alignment North

Bridge Structures

- Pier/Tower

New Alignment North

Goethals Bridge Replacement EIS
Figure 3
New Alignment North
United States Coast Guard



Legend

Alignments

Buffer / Right - of - Way - Existing Alignment South

Edge of Structure - Existing Alignment South

Bridge Structures

Pier/Tower

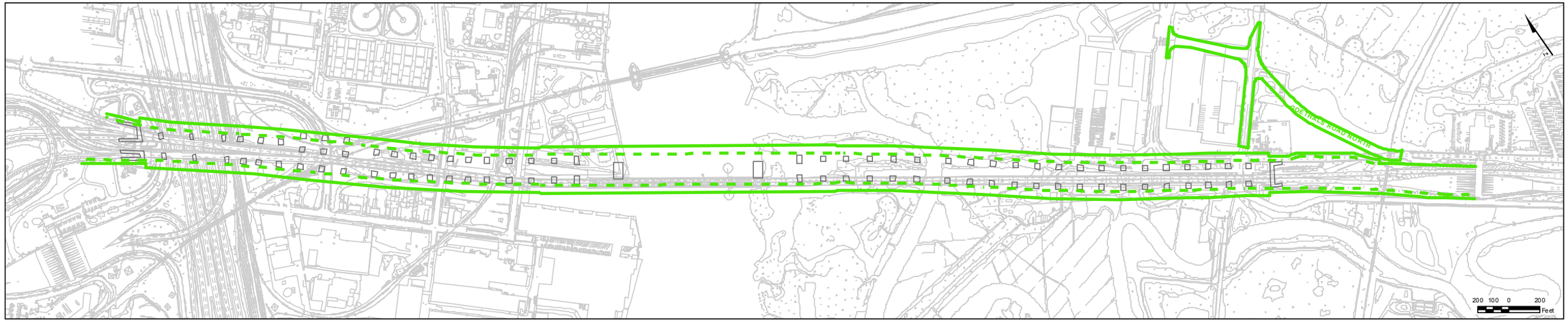
Existing Alignment South

Goethals Bridge Replacement EIS

Figure 4

Existing Alignment South

United States Coast Guard



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Alignments

Buffer / Right - of - Way - Existing Alignment North

Edge of Structure - Existing Alignment North

Bridge Structures

Pier/Tower

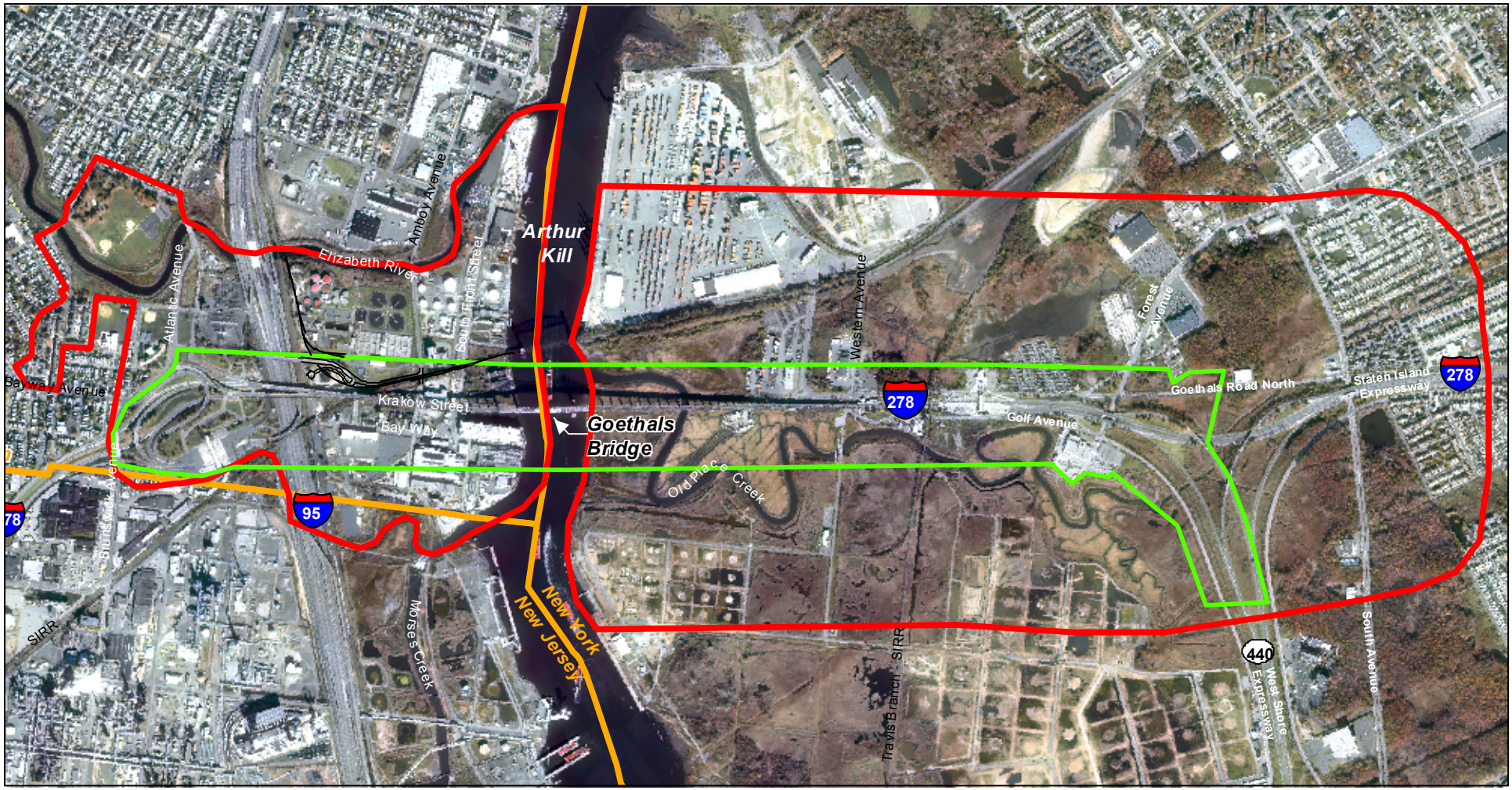
Existing Alignment North

Goethals Bridge Replacement EIS

Figure 5

Existing Alignment North

United States Coast Guard



Legend

- Area of Potential Effect - Architectural
- Area of Potential Effect - Archeological

Source:
Basemapping: Port Authority of New York and New Jersey, 2002.
Data: The Louis Berger Group, 2004.

Goethals Bridge Replacement EIS

Figure 6

Goethals Bridge Replacement APEs

United States Coast Guard

2.0 METHODOLOGY

2.1 Legal and Regulatory Requirements

The National Historic Preservation Act of 1966 establishes that "the historical and cultural foundations of the nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people." The act requires federal agencies to identify and evaluate historic properties and to consider the effects of their undertakings on listed or eligible properties. Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their actions on properties listed or eligible for listing in the National Register. While the act does not require the preservation of such properties, it does require that their historic values be considered during the process and seeks to encourage agencies to avoid or minimize damage to historic properties.

The *Goethals Bridge Replacement Phase I Archaeological Report* (August 2007), *Goethals Bridge Replacement Historic Resources Report* (August 2007), and the *Goethals Bridge Replacement Historic Architectural Resource Study, New Jersey Revised Report* (December 2007) were prepared to identify historic architectural resources in the project area that are National Historic Sites or Landmarks, are listed on the State and National Registers of Historic Places, and have been determined eligible or have State Historic Preservation Officer (SHPO) opinions of eligibility, and are potentially eligible for listing on the State and National Registers. The regulations developed under Section 106 of the National Historic Preservation Act (NHPA) require that federal agencies or applicants for federal funding, permits, and authorizations take into account the effects of their undertakings to any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places and to provide an opportunity for comment on an undertaking. A project is considered to have an adverse effect on properties if it changes the quality or cultural characteristics (i.e. the character-defining features) that render them eligible for listing in the National Register.

Historic properties of national, state, and local significance may be nominated to the National Register of Historic Places (National Register, or NRHP) and the New Jersey Register of Historic Places (New Jersey Register) following evaluation in accordance with an established set of criteria for determining the significance of potential historic architectural and/or archaeological resources (i.e. evaluation of their eligibility for listing in the National Register) as set forth in the guidelines (36 CFR 60):

The quality of significance in American history, architecture, archaeology, engineering, and culture that is present in districts, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and

- *A. That are associated with events that have made a significant contribution to the broad patterns of our history;*
- *B. That are associated with the lives of persons significant in our past;*
- *C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and*
- *D. That have yielded, or may be likely to yield, information important in prehistory or history.*

While the National Register Criteria for Evaluation are standards by which eligibility of a property is judged, certain properties are required to meet special requirements. These requirements are called Criteria Considerations, and are also taken from the evaluation criteria set forth in the guidelines (36 CFR 60):

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties achieving significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

b. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or

d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

g. A property achieving significance within the past 50 years if it is of exceptional importance.

The implementing regulations require federal agencies to consult with the respective state historic preservation office(s) to identify historic properties listed in or eligible for listing in the National Register potentially affected by the undertaking, to assess the undertaking's effects on the listed or eligible National Register historic properties, and to avoid, minimize, or mitigate any adverse effects on historic properties. The EIS scoping process under Section 106 was initiated in September 2004. Section 106 consultation with the New York State Office of Parks, Recreation and Historic Preservation and New Jersey Historic Preservation Office regarding historic resources within the Goethals Bridge Replacement project area began in June 2005.

2.2 Criteria of Effect and Adverse Effect

After the eligible and listed historic properties within a project area are identified and reviewed by SHPO, the next step in the Section 106 process is to apply criteria of effect and adverse effect (specified in 36 CFR 800.9) to determine if an undertaking will affect a property and whether any effects will be adverse. The effects assessment is undertaken in consultation with the respective SHPOs.

Application of the criteria of effect and adverse effect will yield one of three findings: no effect, no adverse effect, or adverse effect. Under 36 CFR part 800.5 (1) Criteria of Adverse Effect *an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location design, setting, materials, workmanship, feeling, or association.* Adverse effects include the following:

i. Physical destruction of or damage to all or part of the property;

ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;

iii. Removal of the property from its historic location;

iv. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

v. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

vi. *Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance; and*

vii. *Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.*

A project many cause adverse visual effects to the landscape and surrounding properties in a manner that changes the aesthetic values of a historic property. Adverse visual effect occurs when the visual impact of an undertaking has a negative effect on the historic property and its environment. Aesthetic effect is the effect on a perceived beauty of a place or structure. Adverse visual (or aesthetic) effects are those effects that diminish the enjoyment and appreciation of a property; compromise or eliminate scenic views; and/or change the setting or view through the introduction of a visual element that is incompatible, out of scale, in great contrast, or out of character with the surrounding area, the aesthetics, or character of a place such that it impairs the historic character or quality of a property.

2.3 Application of Criteria of Effect

Application of the criteria of effect has been applied to the eligible or listed National Register historic properties within the APE for each of the four proposed bridge alternatives currently under consideration: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*. The proposed undertaking results from a foreseen need to improve traffic conditions at the Goethals Bridge crossing and directly impacts the historic Goethals Bridge. Goethals Bridge has been a prominent feature since its construction in 1928. The proposed project will result in the introduction of elements equally as prominent. To address the affects of this undertaking, visual as well as other considerations, both short term and long term impacts, are included in the assessment of effects.

3.0 ARCHAEOLOGICAL RESOURCES

3.1 Data Summary

A Phase I archaeological survey was conducted by The Louis Berger Group, Inc./Parsons Brinckerhoff Joint Venture (Berger/PB JV) in 2004, on behalf of the United States Coast Guard (USCG) as part of the Proposed Project and the Goethals Bridge Replacement EIS pursuant to the instructions and intents set forth by Section 101(b)(4) of the National Environmental Policy Act of 1969; Sections 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act; 23 CFR 771, Final Rule of August 28, 1987; 36 CFR 66; and the amended Procedures for the Protection of Historic and Cultural Properties as set forth in 36 CFR 800, September 2, 1986. The purpose of the archaeological investigation was to determine (1) the presence or absence of archaeological resources within the archaeological area of potential effect (APE), (2) whether any deposits are present within the archaeological APE that are eligible for the National Register of Historic Places (NRHP) and which may be subject to effects arising from the Proposed Project, and (3) archaeologically sensitive areas that may preclude the feasibility of certain Project alternatives. Detailed discussions of the background research, archaeological, field methods, and results are contained within the August 2007 *Goethals Bridge Replacement Richmond County, New York and the City of Elizabeth, Union County, New Jersey Phase I Archaeological Report* that was submitted to and reviewed by the New York State Office of Parks Recreation and Historic Preservation (NYSOPRHP) and the New Jersey Historic Preservation Office (NJHPO). The archaeological APE for New York and New Jersey is shown in Figure 6.

The results of background research indicate that although two prehistoric archaeological sites and five historic archaeological sites have been previously identified within the New York section of the APE, none of those archaeological resources were determined to be National Register listed or eligible. Additionally, no archaeological sites have been previously identified within the New Jersey section of the APE. A surface inspection of the APE also indicated that much of the Goethals Bridge corridor has been greatly impacted by road construction, residential and commercial development, or a combination of these factors. Likewise, subsurface testing suggested that previous land use within the APE has included filling and grading, activities that have resulted in the alteration of the original surface contours throughout much of the APE. This holds particularly true for the New Jersey section of the APE in which most areas of the New Jersey APE are dominated by impervious surfaces, contaminated soils, or deeply disturbed strata; only one small area, a grassy median between roadway entrance/exit ramps of the Goethals Bridge, was determined suitable for archaeological subsurface testing in New Jersey.

The Phase I archaeological subsurface survey within the New York section of the APE consisted of the excavation of 261 shovel test pits and identified the presence of 996 historic/modern artifacts, including some early historic artifacts. Although the presence of early ceramic types and early “broad/crown” window glass may be related to the eighteenth and nineteenth century occupation of the APE, evidenced by historic cartographic resources, these artifacts were not found in any dense concentrations, but were scattered throughout the New York section of the APE. As a result, it is not possible to attribute these artifacts to any one of the several eighteenth and nineteenth century industrial and residential buildings that were once located within the APE. Additionally, these early historic artifacts were recovered in association with more recent modern bottle glass and plastic. As such, these historic period artifacts do not represent significant archaeological resources. Due to the lack of archaeological integrity, evidenced by the preponderance of fill/disturbed soils, mixed historic deposits, and the lack of historic cultural features, the tested portions of the New York section of the APE does not contain any recommended New York Register of Historic Places (NYRHP)/NRHP eligible historic archaeological resources.

The Phase I archaeological survey within the New York section of the APE also identified the presence of seven prehistoric artifacts within five distinct loci. Although these five loci represent areas of prehistoric archaeological sensitivity, the quantity of prehistoric artifacts recovered from any one and all of these loci is extremely low and none of the prehistoric artifacts are temporally diagnostic. Additionally, although all of the prehistoric artifacts were recovered from natural soil contexts that were similar in color and texture (suggesting that culture-bearing soil layers are present on both the north and south sides of the Goethals Bridge), all but two of the prehistoric artifacts were found in association with more recent historic artifacts, suggesting some degree of historic impact to the prehistoric deposits. These prehistoric artifacts were also not found in any dense concentration, but were scattered in low quantities throughout five loci within the New York section of the APE. Due to the locations of these prehistoric

artifacts, within the loosely defined boundaries of the Old Place Creek Site (NYSM #7215; NYSOPRHP #s A085-01-0134 and A085-01-2366), these artifacts are likely associated with the Old Place Creek Site and will require consultation with the New York State Museum (NYSM) to determine the most appropriate location for final and permanent curation. These prehistoric artifacts, however, do not represent significant prehistoric archaeological resources, and are therefore not eligible for the NYRHP/NRHP. The NYSOPRHP concurred that no NRHP eligible sites were identified within the areas of the New York section of the APE that were examined (NYSOPRHP 11/16/2007).

Archaeological subsurface testing, consisting of 20 shovel test pits, was also conducted in one location within the New Jersey section of the APE; a small grassy median at Interchange 13 of the New Jersey Turnpike. This archaeological testing revealed excessive amounts of fill and disturbed soils. This subsurface testing also yielded 153 historic/modern artifacts, including some early historic artifacts. All of these artifacts were recovered from fill or disturbed contexts and were found in association with more modern refuse such as plastic and modern bottle glass. As a result, the presence of early ceramic types and early "broad/crown" window glass may be related to the eighteenth and nineteenth century occupation of the archaeological APE, evidenced by historic cartographic resources, but as these artifacts were found in fill and disturbed soils within the tested portion of the New Jersey section of the APE, it is not possible to attribute these artifacts to any one of the several eighteenth and nineteenth century industrial and residential buildings that were once located within the APE; the remains of which have been effectively destroyed by the construction of industries and roadways in this portion of the APE. As such, these historic period artifacts do not represent significant archaeological resources. Due to the lack of archaeological integrity, evidenced by the preponderance of fill/disturbed soils, mixed historic deposits, and the lack of historic cultural features, the New Jersey section of the APE does not contain any New Jersey Register of Historic Places (NJRHP)/NRHP eligible historic archaeological resources. Likewise, as no prehistoric artifacts or features were recovered or noted during the archaeological subsurface survey of the New Jersey section of the APE, and as the subsurface survey has demonstrated large scale disturbance to the original topography of the New Jersey section of the APE, no prehistoric archaeological features are likely to exist within the New Jersey section of the APE. As a result, the NJHPO concurred that no further archaeological work is warranted for the New Jersey section of the APE (NJHPO 9/28/2007).

3.2 Application of Criteria of Adverse Effect

All areas within the New York and New Jersey sections of the archaeological APE were systematically tested for the presence of archaeological resources if they: 1) were not obscured by impervious surfaces, such as buildings and paved parking areas; 2) did not contain previously documented disturbed/contaminated soils; and 3) were not obscured by standing water. The shovel test pit transects that were excavated for this project are representative of where the ground disturbances would occur within each of the four alternatives of the Proposed Project that have been selected during the alternatives screening process, with the exception of the proposed relocation of Goethals Road North (New York section) that is associated with both of the northern alternatives being considered.

Subsurface testing within the investigated portions of the New York section of the archaeological APE did not identify any significant or recommended NRHP eligible prehistoric or historic archaeological resources. The NYSOPRHP concurred that no NRHP eligible archaeological resources were identified within the areas of the New York APE that were investigated, including the main corridor (NYSOPRHP November 16, 2007 and December 18, 2007). Subsurface testing within the New Jersey section of the archaeological APE did not identify any significant or recommended National Register-eligible archaeological deposits and the New Jersey State Historic Preservation Office (NJHPO) has concurred that no further archaeological investigations are required within the New Jersey archaeological APE (NJHPO September 28, 2007). Project effects for the four proposed alternatives currently under consideration (i.e., 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*) are discussed individually below.

New Alignment South Alternative – a single-bridge replacement in an alignment directly south of the existing Goethals Bridge:

The NYSOPRHP and the NJHPO have concurred that no NRHP eligible or listed archaeological resources exist within areas of ground disturbance associated with this alternative and that the archaeological testing that was

conducted for this alternative has been sufficient. As a result, this alternative will have no effect on NRHP eligible or listed archaeological resources within the New York and New Jersey sections of the APE. Additionally, both the NYSOPRHP and the NJHPO have indicated that no further archaeological testing within the APE is required for this alternative (NYSOPRHP 12/18/2007; NJHPO 9/28/2007).

Additionally, any proposed staging/work areas as well as any potential soil disturbances that may be required for stormwater runoff detention basins or wetland mitigation areas beyond the limits of the New Jersey or the New York sections of the archaeological APE have not been investigated for the presence of archaeological resources. As a result, such areas may require an archaeological assessment and/or investigation as well as continued consultation with the SHPOs to determine the presence or absence of NRHP eligible archaeological resources. If NRHP eligible archaeological resources are determined to exist in any/all of those locations, it will be required to assess the effects of the Proposed Project on such resources.

New Alignment North Alternative – a single-bridge replacement in an alignment directly north of the existing Goethals Bridge:

The NYSOPRHP has concurred that no NRHP eligible or listed archaeological resources exist within areas of ground disturbance associated with the main corridor of this alternative (New York section) and that the archaeological testing that was conducted for the main corridor of this alternative has been sufficient (NYSOPRHP December 18, 2007). As a result, this alternative will have no effect on NRHP eligible or listed archaeological resources within the main corridor of this alternative. The NYSOPRHP has indicated that no further archaeological testing is required for the main corridor of this alternative.

If this alternative were to be selected as the applicant's proposed action, however, the NYSOPRHP requires that an archaeological assessment and survey be conducted within the area of the proposed relocation of Goethals Road North associated with this alternative that was not archaeologically surveyed as part of the 2004 investigations. Such investigation would be conducted to determine if NRHP eligible archaeological resources are present within that portion of the APE. As no archaeological survey has been conducted to date in the area of the proposed relocation of Goethals Road North, it is not presently possible to evaluate the effects of the Proposed Project on NRHP eligible archaeological resources within this portion of the APE. If eligible resources exist within the area of the relocation of Goethals Road North, then further consultation with the NYSOPRHP would be required to identify appropriate measures to avoid, minimize, or mitigate impacts to the resource(s). If no NRHP eligible archaeological resources are present within the area of the relocation of Goethals Road North, then it will not be necessary to consider any alternatives for avoidance or mitigation of impacts to archaeological resources associated with this alternative (NYSOPRHP December 18, 2007).

The NJHPO has concurred that no NRHP eligible or listed archaeological resources exist within the areas of ground disturbance associated with this alternative and that the archaeological testing that was conducted for this alternative has been sufficient. As a result, this alternative will have no effect to NRHP eligible or listed archaeological resources within the New Jersey Section of the APE. Additionally, the NJHPO has indicated that no further archaeological testing is required for this alternative (NJHPO 9/28/2007).

Additionally, any proposed staging/work areas as well as any potential soil disturbances that may be required for stormwater runoff detention basins or wetland mitigation areas beyond the limits of the New Jersey or the New York sections of the archaeological APE have not been investigated for the presence of archaeological resources. As a result, such areas may require an archaeological assessment and/or investigation as well as continued consultation with the SHPOs to determine the presence or absence of NRHP eligible archaeological resources. If NRHP eligible archaeological resources are determined to exist in any/all of those locations, it will be required to assess the effects of the Proposed Project on such resources.

Existing Alignment South Alternative – a single-bridge replacement in an alignment within and extending south of the existing Goethals Bridge alignment:

The NYSOPRHP and the NJHPO have concurred that no NRHP eligible or listed archaeological resources exist within areas of ground disturbance associated with this alternative and that the archaeological testing that was conducted for this alternative has been sufficient. As a result, this alternative will have no effect on NRHP eligible

or listed archaeological resources within the New York and New Jersey sections of the APE. Additionally, both the NYSOPRHP and the NJHPO have indicated that no further archaeological testing within the APE is required for this alternative (NYSOPRHP 12/18/2007; NJHPO 9/28/2007).

Additionally, any proposed staging/work areas as well as any potential soil disturbances that may be required for stormwater runoff detention basins or wetland mitigation areas beyond the limits of the New Jersey or the New York sections of the archaeological APE have not been investigated for the presence of archaeological resources. As a result, such areas may require an archaeological assessment and/or investigation as well as continued consultation with the SHPOs to determine the presence or absence of NRHP eligible archaeological resources. If NRHP eligible archaeological resources are determined to exist in any/all of those locations, it will be required to assess the effects of the Proposed Project on such resources.

Existing Alignment North Alternative – a single-bridge replacement in an alignment within and extending north of the existing Goethals Bridge alignment:

The NYSOPRHP has concurred that no NRHP eligible or listed archaeological resources exist within areas of ground disturbance associated with the main corridor of this alternative (New York section) and that the archaeological testing that was conducted for the main corridor of this alternative has been sufficient (NYSOPRHP December 18, 2007). As a result, this alternative will have no effect on NRHP eligible or listed archaeological resources within the main corridor of this alternative. The NYSOPRHP has indicated that no further archaeological testing is required for the main corridor of this alternative.

If this alternative were to be selected as the applicant's proposed action, however, the NYSOPRHP requires that an archaeological assessment and survey be conducted within the area of the proposed relocation of Goethals Road North associated with this alternative that was not archaeologically surveyed as part of the 2004 investigations. Such investigation would be conducted to determine if NRHP eligible archaeological resources are present within that portion of the APE. As no archaeological survey has been conducted to date in the area of the proposed relocation of Goethals Road North, it is not presently possible to evaluate the effects of the Proposed Project on NRHP eligible archaeological resources within this portion of the New York section of the APE. If eligible resources exist within the area of the relocation of Goethals Road North, then further consultation with the NYSOPRHP would be required to identify appropriate measures to avoid, minimize, or mitigate impacts to the resource(s). If no NRHP eligible archaeological resources are present within the area of the relocation of Goethals Road North, then it will not be necessary to consider any alternatives for avoidance or mitigation of impacts to archaeological resources associated with this alternative (NYSOPRHP December 18, 2007).

The NJHPO has concurred that no NRHP eligible or listed archaeological resources exist within the areas of ground disturbance associated with this alternative and that the archaeological testing that was conducted for this alternative has been sufficient. As a result, this alternative will have no effect to NRHP eligible or listed archaeological resources within the New Jersey section of the APE. Additionally, the NJHPO has indicated that no further archaeological testing is required for this alternative (NJHPO 9/28/2007).

Additionally, any proposed staging/work areas as well as any potential soil disturbances that may be required for stormwater runoff detention basins or wetland mitigation areas beyond the limits of the New Jersey or the New York sections of the archaeological APE have not been investigated for the presence of archaeological resources. As a result, such areas may require an archaeological assessment and/or investigation as well as continued consultation with the SHPOs to determine the presence or absence of NRHP eligible archaeological resources. If NRHP eligible archaeological resources are determined to exist in any/all of those locations, it will be required to assess the effects of the Proposed Project on such resources.

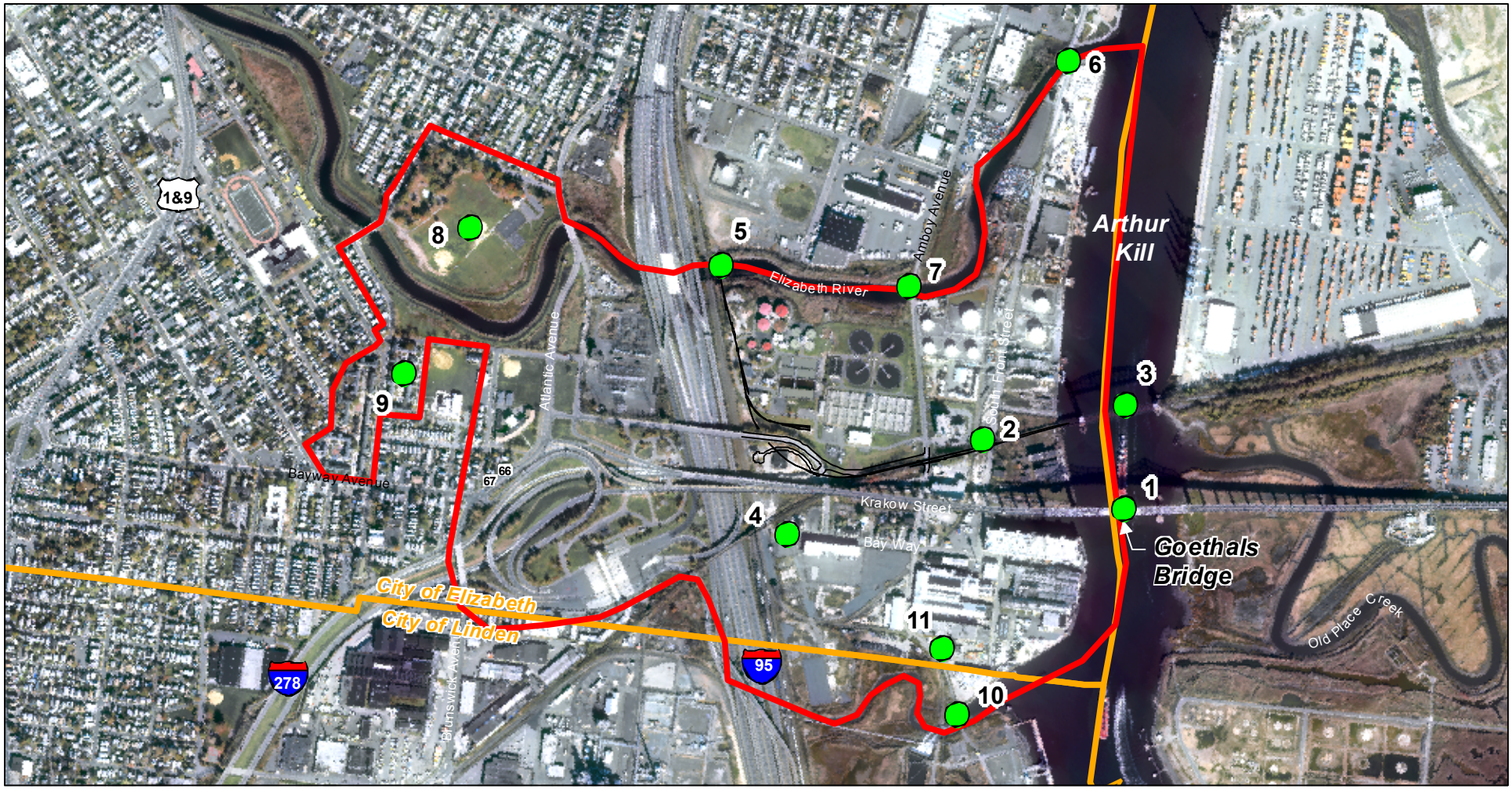
4.0 HISTORIC ARCHITECTURAL RESOURCES WITHIN THE NEW JERSEY APE

4.1 Data Summary

A revised historic architectural study was undertaken and submitted to NJHPO in December 2007. The survey looked at a total of 74 resources within the historic architectural APE. Of these, a total of 11 historic architectural resources were identified as eligible for or listed on the National Register of Historic Places (Table 1, Figure 7). Each of these historic architectural resources has been evaluated according to the criteria of adverse effect to determine whether or not the proposed Goethals Bridge Replacement project will alter the characteristics of the historic properties that qualify them for inclusion in or eligibility for the National Register.

Table 1: Historic Architectural Resources within the New Jersey Architectural APE

No	Resource Name/Address	Block/ Lot	Date Built	Eligibility Status	Effects Assessment
1.	Goethals Bridge	N/A	1928	SHPO Opinion Eligible 2/14/1995 (NJ) 1/25/1995 (NY)	Demolition Finding of **Adverse Effect**
2.	Staten Island Railroad Historic District, Elizabeth	N/A	1889-1959	SHPO Opinion Eligible 2/27/1995	Adverse Visual Impacts Finding of **Adverse Effect**
3.	Staten Island Railway Lift Truss Bridge over Arthur Kill	N/A	1959	SHPO Opinion Eligible 6/11/1991	Adverse Visual Impacts Finding of **Adverse Effect**
4.	Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey (CNJ), Elizabeth	N/A	1871	SHPO Opinion Eligible 8/30/2000	Visual Impacts No Adverse Effect
5.	Elizabeth River Bridge, Central Railroad of New Jersey (CNJ), Elizabeth	N/A	ca. 1912	SHPO Opinion Eligible 4/9/1990	Visual Impacts No Adverse Effect
6.	South Front Street over Elizabeth River, Elizabeth Bridge # 2004001	N/A	1920	Recommended Eligible	Visual Impacts No Adverse Effect
7.	South First Street over Elizabeth River, Elizabeth	N/A	1908	Recommended Eligible	Visual Impacts No Adverse Effect
8.	Mattano Park, Elizabeth (Union County Park System)	4-59 5/453.B 5/1262 7/968	1926-1964	Recommended Eligible	Visual Impacts No Adverse Effect
9.	Mravlag Manor Housing Project 635-681 & 640-664 Clarkson Avenue	4/361	1939	Recommended Eligible	Visual Impacts No Adverse Effect
10.	Sound Shore Branch over Morses Creek, Linden	586/10	ca. 1920	Feature of the Sound Shore Railroad,	See under Sound Shore Railroad
11.	Sound Shore Railroad		ca. 1895	Recommended Eligible	Visual Impacts No Adverse Effect



Legend

- Area of Potential Effect
- Historical Resource

Source:
Basemapping: Port Authority of New York and New Jersey, 2002.
Data: The Louis Berger Group, 2004.

Goethals Bridge Replacement EIS

Figure 7

Historic Architectural Resources within the APE

United States Coast Guard

4.2 Application of Criteria of Adverse Effect

Goethals Bridge, Elizabeth, New Jersey and Staten Island, New York; (Photos 2 and 3)

The Goethals Bridge is a four-lane cantilever truss bridge that carries Interstate 278 over the Arthur Kill between Elizabeth, New Jersey, and Staten Island, New York (Photos 2 and 3). Completed in 1928, the elevated portion of the bridge is over one mile in length and has a total length, including the approach viaduct spans, of approximately 11,825 feet. The steel truss cantilever design includes a 672-foot long suspended main span and two 240-foot anchor spans. The piers were sunk 50 feet below the bottom of the channel. Long approach viaducts comprised of steel girders set atop 75 arched concrete piers carry the roadway to its mid-span height of 135 feet above the mean high water line of the Arthur Kill. Its unusual mid-span height was a design modification to allow passage of deep-sea vessels through the Arthur Kill.

The bridge retains a high degree of integrity and has undergone a few minor changes since its construction. Concrete medians were installed in 1972 and parapets have been added to increase bridge safety. To prevent damage from water traffic, two protective fender cells were installed in the Arthur Kill on the north and south sides of the main Staten Island pier. In 1964, a new toll plaza and administration building were constructed in Staten Island. The administration building has a two-story modern building with a prominent clock, visible from the highway. North of Goethals Road and adjacent to the bridge is a two-story maintenance building, connected to the toll plaza by an elevated walkway above the road (AKRF 1994). In 1964, a $3.9 million project was announced to improve the New Jersey approaches to the bridge, which included construction of a 1,200-foot long approach south of and parallel to the original viaduct. The project also included roadway changes and ramps added at the connection to the New Jersey Turnpike, which required removal of several of the original arched concrete piers at the approach viaduct at the Elizabeth, New Jersey side. Other modifications include widening the approach, circa 1969, through the addition of larger deck girders to the outside of the original beams (Lichtenstein 1994). The pedestrian walkways have been closed, due to condition issues, for a decade.

The Goethals Bridge has opinions of eligibility from both the NJHPO and NYSOPRHP and is recommended eligible by the New York City Landmarks Preservation Commission (2000). The Goethals Bridge is eligible for listing in the National Register of Historic Places under Criteria A and C. The Goethals Bridge, which was opened to traffic in 1928 and designed by J.A.L. Waddell with Othmar Ammann, was intended by the Port Authority of New York and New Jersey to alleviate the congested ferry system to Staten Island as well as provide the first link for vehicular traffic between Staten Island and the New Jersey mainland (Criterion A). The bridge consists of a high 672-foot-long main span formed by a cantilever steel through truss and long elevated steel girder approaches supported by concrete piers, with a total length of one mile (Criterion C). Despite minor changes, such as the addition of concrete medians and parapets, changes in the New Jersey approach, and the replacement of the toll plaza, administration, and maintenance buildings, the bridge retains a high degree of integrity (NJHPO 2/14/1995).

Application of Criteria of Effect to the Goethals Bridge

The proposed project will have an adverse effect on the National Register eligible Goethals Bridge. Under the four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; the historic Goethals Bridge will be replaced and the historic structure removed in its entirety. The Goethals Bridge Replacement project will cause the physical demolition of the bridge and therefore, result in an Adverse Effect to the Goethals Bridge.

Photo 2: Goethals Bridge View Southwest

Photo 3: Goethals Bridge 1991 View Southeast; Source: HAER NY-305, Photographer Jet Lowe

Staten Island Railroad Historic District, Elizabeth, New Jersey (Photos 4 and 5)

The Staten Island Railroad extends from Cranford Junction, New Jersey to St. George, Staten Island. The railroad is 26.5 miles in length. In New Jersey, the Staten Island Railroad extends approximately 6.5 miles from the vertical lift bridge over the Arthur Kill west to Cranford Junction. The New Jersey portion of the right-of-way includes the rail line itself, rail bridges, and other railroad related features. The New Jersey portion of the historic railroad includes three individually eligible bridges, one of which, the 1959 Staten Island Railway Truss Bridge (Vertical Lift Bridge) over the Arthur Kill (Photo 4). In 1995, a survey of the New Jersey portion of the Staten Island Railroad was conducted as part of the Staten Island Bridges Program Modernization and Capacity Enhancement Project, which resulted in a NJHPO Opinion of Eligibility for the district (AKRF 1994).

The section of the Staten Island Railroad within the Goethals Bridge Replacement APE includes the Staten Island Railway Truss Bridge (1959 Vertical Lift Bridge), which spans the Arthur Kill. West of the lift bridge, an elevated metal through girder metal bridge connects to an elevated deck girder approach bridge, supported by concrete arched piers. As the right-of-way continues west, a metal and concrete deck girder bridge that spans South First Street with a long timber trestle on both sides that stretches under the Goethals Bridge Approach Viaduct to the Conrail Chemical Coast rail line. A metal bridge crosses the Conrail line and the New Jersey Turnpike. This stretch of the rail line, originally known as the Baltimore & New York Railroad, was constructed between 1884 and 1889. Sections of the rail line have been reconstructed (AKRF).

The New Jersey portion of the Staten Island Railroad has an opinion of eligibility from the NJHPO. The New Jersey portion of the Staten Island Railroad is eligible for listing on the National Register under Criterion A. The Staten Island Railroad is significant as a critical link in the Baltimore and Ohio Railroad freight service between Baltimore and Manhattan via Staten Island. In New Jersey, the line is approximately 6.5 miles from Cranford Junction to the Vertical Lift Bridge over the Arthur Kill in Elizabeth. The boundaries of the historic district are the right-of-way, including: the rail line itself, rail bridges, a clerical office/communications shed, a diner, a concrete telephone booth, as well as and other associated features or structures. The Staten Island Railroad Historic District lies within the Union County municipalities of Cranford Township, Roselle Borough, Roselle Park Borough, and the City of Elizabeth (NJHPO 2/27/95).

Application of Criteria of Effect to the Staten Island Railroad Historic District

The proposed project will have an adverse visual effect on the National Register eligible Staten Island Railroad Historic District. At present the Goethals Bridge approach viaduct spans the Staten Island Railroad east of the New Jersey Turnpike and Interchange 13 at the Relocated Bayway (Photo 5). The proposed *New Alignment South Alternative* and the *Existing Alignment South Alternative* will span the historic railroad south of the current approach. The *New Alignment North Alternative* and the *Existing Alignment North Alternative* propose to span the railroad at the same location of the existing approach viaduct. All four proposed alternatives will be wider than the existing approach spans, an increase from four lanes to six lanes in width.

As described above, the four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will cross over the Staten Island Railroad at the same location or near the same location as the present alignment. None of the proposed alternatives will cause physical destruction or damage to the historic district. The proposed alternatives will not alter the historic district or move the location of the railroad or any of the character defining features of the railroad, itself. The proposed Goethals Bridge Replacement project will not change the character of the property's use.

The project will, however, introduce new physical features within the property's setting and will change the visual elements surrounding and adjacent to the railroad. The proposed new bridge will also visually impact the contributing features of the historic district, such as the railroad trestle and the Arthur Kill Lift Bridge, which is located adjacent to the Goethals Bridge (Photo 5). The proposed Goethals Bridge will be wider than the current structure due to an increase from four lanes to six lanes and the alignment will be moved south of the present location under two of the alternatives, thus having the potential to alter the scale and relationship of the bridge as it relates to the railroad. Additionally, although design plans have not yet been completed, the proposed new bridge will also have the potential to contrast with the existing elements of the historic railroad in form, color, and texture.

Views of the Staten Island Railroad and the views from the railroad will be greatly altered. Given the close spatial relationship between the bridge and the railroad, the proposed removal of and replacement of the Goethals Bridge will have an adverse visual effect on the Staten Island Railroad Historic District.

Photo 4: Staten Island Railroad View Southeast; Source AKRF 1994

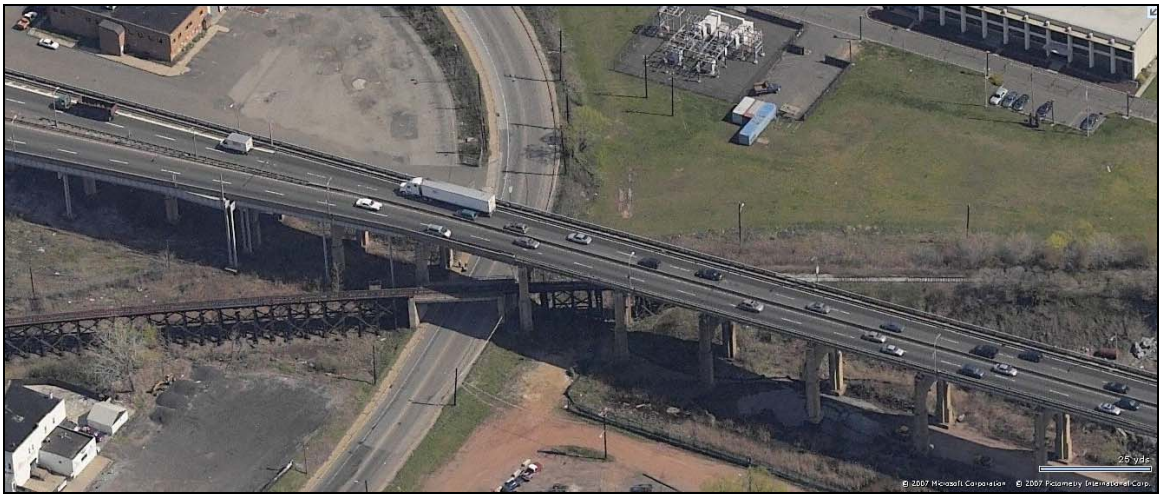


Photo 5: Goethals Bridge Approach over Staten Island Railroad View North;
Source Microsoft Live Search 2007

Staten Island Railway Lift Truss Bridge over Arthur Kill, Elizabeth, New Jersey (Photos 4 and 6)

The Staten Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge) was constructed by the Baltimore and Ohio Railroad in 1959 and carries a single track of the Staten Island Railroad over the Arthur Kill from Elizabeth, New Jersey to Staten Island, New York (Photos 4 and 6). This main vertical lift truss is 558 feet long with two 215-foot towers and has 13 plate girder approach spans (Hedefine and Kuesel 1959). The bridge consists of a Pratt truss, is 31 feet above mean water level, and has a clearance of 135 feet above mean water level when raised. Each of the towers is supported by four columns with bracing on all sides and space inside for the counterweights. An operator's house is located in one of the towers. Both towers have flashing aerial beacons (Hedefine and Kuesel 1959: 38).

The Staten Island Railroad Lift Truss Bridge, which has an opinion of eligibility from the NJHPO, is significant under Criterion C as a well-preserved example of a proprietary bridge type, which has the distinction of being the longest span in the world. The bridge, which has a main span length of 558 feet, is the longest by about seven feet, according to Richmond (Richmond 2005; NJHPO 6/11/1991). The al-Firdan Bridge over the Suez Canal in Egypt (1963) and the Cape Cod Canal Railroad Bridge in Massachusetts (1933-1935) are close in length (Richmond 2005:144). In addition, the bridge is a key contributing element to the National Register eligible Staten Island Railroad Historic District (described above).

Application of Criteria of Effect to the Staten Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge)

The proposed project will have an adverse visual effect on the State Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge). The Staten Island Railway Lift Truss Bridge and the Goethals Bridge are adjacent structures, spanning the Arthur Kill. The Staten Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge) is located approximately 550 feet north of the Goethals Bridge (Photos 6 and 7). Both these historic structures are prominent features of the landscape. The proposed alternatives currently under consideration will locate the new Goethals Bridge in the approximate area of the current alignment. As depicted in Figures 2-5, the *New Alignment South Alternative* and the *Existing Alignment South Alternative* will not be located any closer to the railroad bridge than the current Goethals Bridge. The *New Alignment North Alternative* and the *Existing Alignment North Alternative* will both locate the proposed new structure closer to the Staten Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge), due to placement of the bridge and the construction of a wider structure, six lanes in width.

As described above, the four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to the railroad bridge. The proposed alternatives will not alter the railroad bridge, do not propose to move the location of the railroad bridge or any of the character defining features of the railroad bridge. The proposed Goethals Bridge Replacement project will not change the character of the property's use. However, the proposed project will alter the physical features within the property's setting. The project will introduce and change the visual elements adjacent to the Staten Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge). Visually, the two bridges are closely linked to the views experienced at these crossings. Although, no design concept has been finalized for the proposed bridge, the scale, materials, and massing of the new bridge will create significant changes in the overall setting and views. Therefore, the proposed removal of and replacement of the Goethals Bridge will have an adverse visual effect on the Staten Island Railway Lift Truss Bridge (1959 Vertical Lift Bridge).

Photo 6: Staten Island Railway Lift Truss Bridge over Arthur Kill View Southwest; Source HAER, Jet Lowe 1991

Photo 7: Staten Island Railroad and Staten Island Railway Lift Truss from Goethals BridgeView North

Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey (CNJ), Elizabeth, New Jersey (Photo 8)

The Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey, also known as the Perth Amboy and Elizabethport Railroad, extends 12.06 miles between the CNJ Main Line in Elizabeth to Perth Amboy on the north side of the Raritan Bay (Photo 8). The rail line linked the CNJ Main Line with communities on the Jersey Shore via the New York and Long Branch Railroad and the Southern Division of the CNJ (USDOT 2004).

The Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey, which has a NJHPO opinion of eligibility, is significant under Criterion A for its history of transporting passengers to vacation and excursion destinations along the New York and Long Branch Railroad in Monmouth and Ocean counties, vacation and excursion passengers traveling to Atlantic City, commuters to Newark and New York from Monmouth and Ocean counties, as well as the transport of labor from Elizabethport to southern New Jersey. Freight shipments carried on the rail line included agricultural, industrial, and manufactured products moving between northern and southern New Jersey, as well as glass and construction sand shipped north by rail (NJHPO 8/30/2000).

Application of Criteria of Effect to the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey

The proposed project will have no adverse effect on the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey. The Goethals Bridge approach viaduct spans the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey east of the New Jersey Turnpike and Interchange 13 at the Relocated Bayway (Photo 9). The proposed *New Alignment South Alternative* and the *Existing Alignment South Alternative* will span the historic railroad slightly to the south of the current approach. The *New Alignment North Alternative* and the *Existing Alignment North Alternative* propose to span the railroad at the same location of the existing approach viaduct. All four proposed alternatives will be wider than the existing approach spans, an increase from four lanes to six lanes in width. None of the proposed alternatives will physically encroach on the railroad, and therefore not alter the railroad or impact the eligibility of the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey.

As described above, the four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will cross over the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey at the same location or near the same location as the present alignment. None of the proposed alternatives will cause physical destruction or damage to the historic district. The proposed alternatives will not alter the historic railroad or move location of the railroad or any of the character defining features of the railroad. The proposed Goethals Bridge Replacement project will not change the character of the property's use. The proposed project will change the physical features of the property's setting. The proposed project will also introduce and/or change the visual elements surrounding and adjacent to the railroad. The proposed Goethals Bridge Replacement will be wider than the current structure due to an increase from four lanes to six lanes, and will be moved south of the present alignment under two of the alternatives. The area immediately surrounding the railroad has had a number of intrusions added to the setting since the late 1940s, such as the construction of the adjacent New Jersey Turnpike and realignment of Bayway. Providing that the form, color and scale of the new bridge is compatible with the existing setting, the change in visual elements adjacent to the railroad will not diminish the integrity of the property's significant historic features. Therefore, the proposed project will have a visual effect, but will not have an adverse effect on the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey.

Photo 8: Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey View North From Tremley Point Bridge

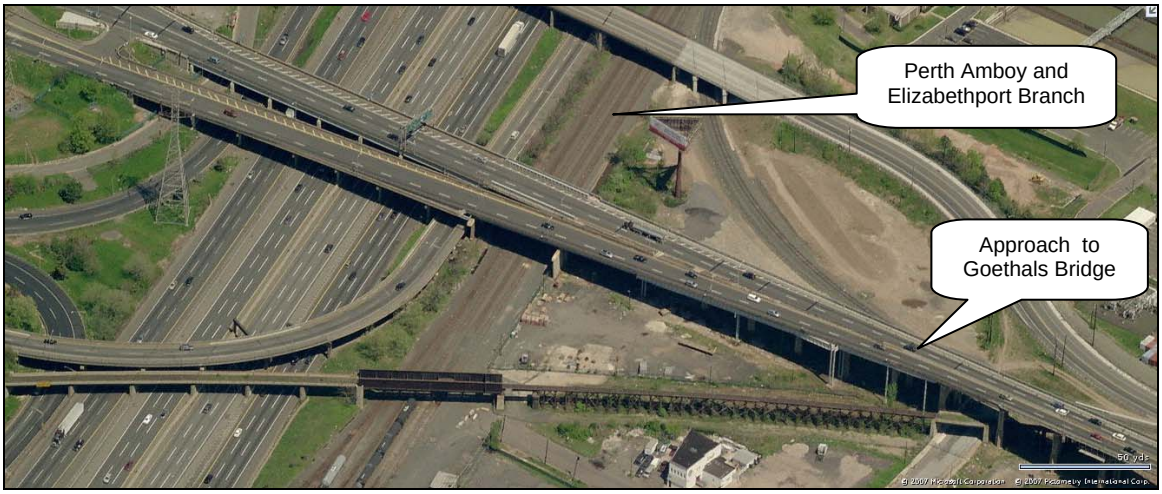


Photo 9: Goethals Bridge over the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey View North; Source Microsoft Live Search 2007

Elizabeth River Bridge, Central Railroad of New Jersey (CNJ), Elizabeth, New Jersey (Photo 10)

The Elizabeth River Bridge, Central Railroad of New Jersey, is a Scherzer-type, single-leaf bascule bridge constructed circa 1912 (Photo 10). The bridge carries the two tracks of the Perth Amboy and Elizabethport Branch of the Central Railroad over the Elizabeth River. The bridge has riveted plate girder construction with concrete piers and abutments and plate girder deck spans at the approaches. The bridge, including approach spans, is 100 feet long and 30 feet wide. The span is raised by means of an overhead counterweight at one end which, when released, causes the whole mass to pivot vertically around a trunnion at the center of gravity. In the Scherzer roller-type bridge, the span also rolls backward along track girders on each side (USDOT 2004; Berger 1986).

The bridge's rolling-lift span was designed by the Scherzer Rolling Lift Bridge Company of Chicago. The firm was responsible for the first modern Bascule, erected in 1893 on Van Burn Street in Chicago. Its rolling lift designs soon gained popularity with American railroad companies. The bridge was built by the Phoenix Bridge Company of Phoenixville, Pennsylvania, a major fabricator and erector of bridges beginning in the mid-nineteenth century. During the early twentieth century, the CNJ embarked upon a number of major improvements to the line. At the time, the railroad commissioned the erection of a number of bridges, at least four of which were bascule spans. Two, built on New Bay in 1904, were replaced in 1926. The two other bascule spans were built on the Elizabeth and Rahway Rivers (USDOT 2004; Berger 1986).

The Elizabeth River Bridge, Central Railroad of New Jersey, has a NJHPO opinion of eligibility and is eligible under Criterion C as a bridge that embodies the distinctive characteristics of a design that figured prominently in the development of the modern bascule bridge. Toward the end of the nineteenth century, three variations on the bascule form were developed in Chicago: the Rail, the Strauss, and the Scherzer. The Scherzer was distinguished by the way in which the span was rolled back as it rose, which gave it the name "rolling-lift." The utility of the Scherzer design led to its adoption by numerous American railroad companies. The Elizabeth River Bridge retains integrity of design, materials, and workmanship and, as such possesses the ability to illustrate the essential features of an important development in the history of American bridge engineering (NJHPO 4/9/1990).

Application of Criteria of Effect to the Elizabeth River Bridge, Central Railroad of New Jersey

The proposed project will have no adverse effect on the Elizabeth River Bridge, Central Railroad of New Jersey. The Elizabeth River Bridge is located adjacent to the New Jersey Turnpike, over 1,500 feet north of the Goethals Bridge approach viaduct, near Interchange 13. The elevated portion of the Relocated Bayway is adjacent to the Goethals approach viaduct, approximately 300 feet from the approach and forms a visual buffer between the approach and the bridge at this location. The Elizabeth River Bridge is over 3,000 feet from the Arthur Kill and the main spans of the Goethals Bridge.

The four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to the Elizabeth River Bridge. The proposed alternatives will not alter the railroad bridge, will not move the location of the railroad bridge or any of the character defining features of the railroad bridge. The proposed Goethals Bridge Replacement project will not change the character of the property's use or physical features within the property's setting that contribute to its historic significance. The proposed Goethals Bridge Replacement will be wider than the current structure, due to an increase from four lanes to six lanes, and create a different visual element, the visual impact will be minimal due to the distance between the Elizabeth River Bridge and the Goethals Bridge and the number of visual obstructions such as the realigned Bayway. Although the project will introduce and/or change the visual elements, the change in visual elements will not diminish the integrity of the property's significant historic features, i.e. integrity of location, design, setting, materials, workmanship, feeling, or association. Therefore, the proposed project will have no adverse effect on the Elizabeth River Bridge, Central Railroad of New Jersey.

Photo 10: Elizabeth River Bridge, Central Railroad of New Jersey View Northwest

South Front Street [Bridge] over Elizabeth River, Elizabeth, New Jersey (Photo 11)

The South Front Street [Bridge] over Elizabeth River is a skewed Strauss heel trunnion bridge with a Warren through truss moveable span (Photo 11). This single-leaf bridge is 158 feet long. The riveted trusses are different lengths; the west truss is 131 feet, 8 inches long and the east truss is 116 feet, 5 inches long. The road is 17 feet 8 inches wide. The bridge has concrete abutments and a prominent concrete counterweight. The counterweight is framed in a truss that pivots on two trunnions. According to the Lichtenstein survey, the counterweight was repaired in 1976 (Lichtenstein 1994). The original gearing and electric motors (c. 1940) were housed above the roadway. A small brick tender's house with a gable roof is sited southeast side of the crossing.

The South Front Street [Bridge] over Elizabeth River, constructed in 1920, has historical and technological significance as a Strauss heel trunnion single-leaf bascule bridge, designed by the Strauss Bascule Bridge Company of Chicago and fabricated by the American Bridge Company's Pencoyd plant. The South Front Street [Bridge] over Elizabeth River is significant under Criterion C as a well-preserved example of a proprietary bridge type that is not common in New Jersey. The South Front Street [Bridge] over Elizabeth River is one of only two documented heel trunnion bridges to carry a roadway in the State of New Jersey—NJ 7 over the Passaic River in Bergen County is the second. Other surviving examples are located on the state's railways. As such, the South Front Street [Bridge] over Elizabeth River is recommended eligible for listing on the National Register of Historic Places (Lichtenstein 1994).

Application of Criteria of Effect to the South Front Street [Bridge] over Elizabeth River

The project will have no adverse effect on the South Front Street [Bridge] over Elizabeth River. This bridge carries South Front Street over the Elizabeth River a short distance from the mouth of the Elizabeth River. Located in a low-lying industrial area along the Arthur Kill, the structure is approximately 3,470 feet north of the Goethals Bridge (Photo 12). The visual setting from the South Front Street Bridge, south toward the Goethals Bridge, includes natural and manmade features such as the Arthur Kill, the Staten Island Railway Lift Truss Bridge, the Staten Island Railroad Historic District, and the Goethals Bridge. View of the Goethals Bridge from South Front Street at the South Front Street Bridge is partially obstructed by the nearby industrial buildings.

The four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to the South Front Street [Bridge]. The proposed alternatives will not alter the South Front Street [Bridge], will not move the location of the bridge or any of the character defining features of the South Front Street [Bridge]. The proposed Goethals Bridge Replacement project will not change the character of the property's use. The proposed replacement Goethals Bridge will be wider than the current structure, due to an increase from four lanes to six lanes, and create a different visual element. The project will introduce and/or change the visual elements; however, the change in visual elements within the property's setting does not appear to contribute to its historic significance. Visually, the proposed project will alter the setting and feeling of the Bayway industrial area surrounding the Goethals Bridge. Providing that the proposed replacement bridge is consistent in composition, feeling, scale, and character and the existing Goethals Bridge, the proposed project will not diminish the integrity of the property's characterizes that qualify it for inclusion in the National Register and therefore, have no adverse effect on the South Front Street [Bridge] over Elizabeth River.

Photo 11: South Front Street [Bridge] over Elizabeth River View Southeast

Photo 12: South Front Street [Bridge] of the Elizabeth River View Southeast

South First Street [Bridge] over Elizabeth River, Elizabeth, New Jersey (Photo 13)

The South First Street [Bridge] over Elizabeth River carries South First Street over the river in an industrial area of Elizabeth. The bridge is a Straus overhead articulated counterweight bridge, 80 feet in length (Photo 13). This single leaf bridge has a riveted warren pony truss span. The bridge is supported by a concrete substructure. The counterweight enclosure is 30 feet above the road surface. The bridge retains its distinctive lattice design. Although fixed in the closed position, the bridge is composed of built-up members, trunnion columns, tower, and counterweight that allow the counterweight to pivot in a motion that is "parallel to itself." The bridge has a steel grid deck that was installed in 1976. The tender's house was destroyed by fire in 1984 along with the electric motor and controls to operate the span, and the bridge fixed in a closed position at that time (Lichtenstein 1994).

The South First Street [Bridge] over Elizabeth River, constructed in 1908, is a historically and technologically significant example of a Strauss articulated overhead counterweight bridge supported by a concrete substructure. The bridge was designed by the Strauss Bascule and Concrete Bridge Company of Chicago. The bridge, which has a NJHPO Opinion of Eligibility dated 6/30/1995, is significant under Criterion C as is one of the earliest and most complete examples of this technologically important bridge type in the state. According the Lichtenstein survey conducted in 1994, in addition to its early date of construction, this example of a bridge type that would become one of the most popular movable bridge types of the early twentieth century in the country, is noteworthy for its enclosure surrounding a raw concrete counterweight. The metal lattice enclosure (or screen) is an aesthetic component found on only one other bridge in New Jersey—the 1906 Federal Street Bridge in Camden. (Lichtenstein 1994).

Application of Criteria of Effect to the South First Street [Bridge] over Elizabeth River

The project will have an adverse effect on the South First Street [Bridge] over Elizabeth River. The bridge carries South First Street over the Elizabeth River in a low-lying industrial. The structure is approximately 1,850 feet north of the Goethals Bridge main spans over the Arthur Kill and approximately 1,550 feet from the approach viaduct at Amboy Avenue (South First Street). The visual setting from the South First Street Bridge, southeast toward the Goethals Bridge, includes manmade features such as the Staten Island Railway Lift Truss Bridge, the Staten Island Railroad Historic District, and the Goethals Bridge (Photo 14).

The four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to the South First Street [Bridge]. The proposed alternatives will not alter the South First Street [Bridge], will not move the location of the South First Street [Bridge] or any of the character defining features of the bridge. The proposed Goethals Bridge Replacement project will not change the character of the property's use. As with the South Front Street Bridge, the project will introduce and/or change the visual elements and the overall setting; however, the change in visual elements will not diminish the integrity of the property's significant historic features. Although the proposed Goethals Bridge Replacement alternatives will be wider than the current structure, due to an increase from four lanes to six lanes, and create a different visual element, the proposed replacement Goethals Bridge should be consistent in composition, feeling, scale, and character and the existing Goethals Bridge. Visually, the Goethals Bridge Replacement project will not diminish from the integrity of the character defining features of the South First Street [Bridge] over Elizabeth River and therefore, have no adverse effect on the South First Street [Bridge] over Elizabeth River.

Photo 13: South First Street [Bridge] over Elizabeth River Aerial View Northeast

Photo 14: Goethals Bridge from South first Street over Elizabeth River View Northeast

Mattano Park, Elizabeth, New Jersey (Block 4, Lot 372 and Block 5, Lot 453.B; Photo 15)

Mattano Park is 39.7-acre park situated along the Elizabeth River. Mattano Park consists of a variety of recreational components, some pastoral landscapes, and remnants of a formal garden (Photo 15). At the northern perimeter, scattered mature trees are situated along South Fifth Street and Firth Avenue. The northern quarter of the park contains a tree-lined curvilinear path that encircles a playground, and connects to the remains of an elevated formal garden. The remnant of a ground-level, children's spray fountain is adjacent to this playground. Two asphalt ovals intersected by asphalt paths comprise the remains of the formal garden, which is void of any plantings. This garden is surrounded by a steel metal rail fence enclosing a series of benches and stationary chess tables with chairs. Picnic groves are in the northwestern portion and the eastern portion of the park and horseshoe and shuffleboard courts. The Elizabeth River meanders through the eastern section of the park. Ball fields dominate the majority of land in the southeastern portion of the park, adjacent to a modern recreational building and parking lot (CRCG 2004).

Modifications to the park began in the 1950s with construction of the New Jersey Turnpike, when three acres were taken for realignment of Trenton Avenue. Beginning in the 1950s, erosion in the park necessitated stabilization efforts. The rose garden was redeveloped in the 1960s. The park's shelter was eventually replaced with a new recreational building in the southeaster portion of the park. After years of neglect, the park was rehabilitated in 1982, resulting in loss of some of the original circulation system and the historic field house (CRCG 2004).

The period of significance for the park encompasses the acquisition and development of the park from 1926 to 1964. Mattano Park is recommended eligible as a contributing element to the eligible Union County Park System currently under review by the NJHPO. Mattano Park is eligible under Criterion A for its contribution to the broad patterns of history in the areas of Community Planning, Entertainment/Recreation, and Landscape Architecture on the national level; and in the area of Conservation on the state level. Under Criterion C, it is significant for its association with the nationally renowned Olmsted Brothers Landscape Architecture Firm of Brookline, Massachusetts. In spite of substantial modification to its landscape, Mattano Park has retained most of its original feeling and association (CRCG 2004; NJHPO 2007).

Application of Criteria of Effect to Mattano Park

The proposed project will have no adverse effect on the Mattano Park. The park is 39.7-acre park within the National Register eligible Union County Park System and extends along the Elizabeth River, northeast of the New Jersey Turnpike. The park is bordered by South Fifth Street to the north, Fifth Avenue to the east, and the Elizabeth River and Atlantic Street to the south, and Clifton and Arnett Streets to the west. At its closest point, the park is approximately 4,400 feet from the main spans of the Goethals Bridge. The area of greatest use is further from the bridge. Photo 13 shows the view of the bridge in the area of South Fifth Street, approximately 5,500 feet from the bridge. Views in the direction of the Goethals Bridge consist of a low plain that extends along the Elizabeth River to the Arthur Kill, dominated by low-rise industrial buildings and transportation corridors (Photos 16 and 17).

The four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to Mattano Park. The proposed alternatives will not physically alter Mattano Park, will not move the location of the park or any of the character defining features of the park. The proposed Goethals Bridge Replacement project will not change the character of the property's use or physical features of the property that contribute to its historic significance. As a public landscape with prominent views of the Goethals Bridge, the project will introduce and/or change the visual elements, including the scenic view, which visually and aesthetically contributes to the park experience. While the scenic view contributes to this property and its setting, the change in the visual landscape will not diminish the integrity of the property's significant historic features as a contributing resource to the eligible Union County Park System. The Goethals Bridge Replacement project will not alter the integrity of location, design, materials, workmanship, or association of Mattano Park. Providing that the proposed replacement of the Goethals Bridge is in keeping with the scale, materials, composition, and overall visual impact of the current structure, the proposed project will have no adverse effect on Mattano Park.

Photo 15: Mattano Park View Southeast

Photo 16: Goethals Bridge as seen from Mattano Park View Southeast

Mravlag Manor Housing Project, 688 Maple Avenue (aka 635-681 & 640-664 Clarkson Avenue, Elizabeth, New Jersey (Block 4, Lot 361; Photo 18)

The Mravlag Manor Housing Project is sited on approximately 15 acres in a residential area south of the City of Elizabeth central business district (Photo 18). The site is opposite Mattano Park and the Elizabeth River. The property is bounded by Carteret and Clifton Streets, Clarkson Avenue, Bayway, and Maple Avenue. The Mravlag Manor Housing Project is a 423-unit public housing development. The apartments are contained in 15 three-story buildings, six of which are on the southeast side of Clarkson at Clifton Street, opposite Mattano Park. The remaining nine buildings, the administration building and former social center, and a new community center are sited on the northwest side of Clarkson Avenue.

Mravlag Manor consists of modified C-plan and L-plan buildings situated around an inner courtyard. The buildings are brick and tile fireproof construction with concrete floors and roofs. In addition to the 15 buildings containing apartments, the complex has an administration building (the former administration and social center building) and new community center, completed in 2003. The former administration and social center building had amenities such as a library at one time. The building, which has been expanded, currently houses the Housing Authority of the City of Elizabeth offices. The courtyards and playgrounds have been updated with new playgrounds and other designated spaces within the courtyard. Small parking areas are fitted between buildings at the perimeter along Maple Avenue.

The Mravlag Manor Housing Project, constructed in 1939, is significant as the first large-scale federal housing project to be built in Elizabeth, New Jersey, under the Wagner-Steagall House Act of 1937. One of such two housing projects constructed at the time, the second project, Pioneer Homes (1940) was demolished as part of a rebuilding program to provide better housing and spur economic development (Garbarine 1998). Although alterations to the complex such as pitched roofs, entrance hoods, and replacement windows have been added, Mravlag Manor is relatively intact, retains a high degree of integrity. Mravlag Manor Housing Project is significant under Criterion A as the first large-scale federal housing project constructed in Elizabeth, New Jersey, in the context of publicly-assisted housing in New Jersey that predates 1952. As one of two similar projects constructed at the time and with the loss of Pioneer Homes, Mravlag Manor is also significant as the only extant example of public housing built during the late 1930s era in Elizabeth (Berger 2007; Milner 2001).

Application of Criteria of Effect to Mravlag Manor Housing Project

The proposed project will have no adverse effect on the Mravlag Manor Housing Project. Those apartments at the Mravlag Manor Housing Project located on Clifton Street, opposite Mattano Park and the Elizabeth River, have the potential to be within the view shed of the Goethals Bridge Replacement project (Photo 17). The buildings are approximately 5,100 feet from the main spans of the Goethals Bridge. Most of the view of the bridge is obstructed by the Bayway Switching Station on Trenton Avenue.

The four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to the Mravlag Manor Housing Project. The proposed alternatives will not alter the Mravlag Manor Housing Project, will not move the location of the buildings or any of the character defining features of the Mravlag Manor Housing Project. The proposed Goethals Bridge Replacement project will not change the character of the property's use or physical features within the property's setting that contribute to its historic significance. Although the Goethals Bridge Replacement project will introduce and/or change the visual skyline, view of the bridge from the Marvlag Manor Housing are minimal, and limited or no views exist from associated courtyards and outdoor open spaces of this property. The change in visual landscape will not diminish the integrity of the property's significant historic features, therefore, the Goethals Bridge Replacement project will have no adverse effect on Mravlag Manor Housing Project.

Photo 17: Goethals Bridge from the Mattano Park at the Elizabeth River near Mravlag Manor View Southeast

Photo 18: Mravlag Manor Housing Project View North

Sound Shore Railroad, Elizabeth, Union County to Carteret, Middlesex County, New Jersey (Photo 19)

The former Sound Shore Railroad is a single track railroad that extends approximately 6 miles between Bayway in the City of Elizabeth in Union County to Chrome in the Borough of Carteret in Middlesex County (Photo 19). Historically, various spur lines and sidings connected the Sound Shore Railroad with the industries along this stretch of the Arthur Kill known as the Chemical Coast. One associated feature, the Sound Shore Railroad Bridge over Morses Creek is also within the Goethals Bridge project area.

The Sound Shore Railroad was completed in 1896 to service the industries along the Arthur Kill. This railroad is significant for its association with the industrial development along this area of the Arthur Kill, familiarly known as the Chemical Coast. The Sound Shore Railroad is eligible for listing on the National Register of Historic Places under Criterion A as an important component of the industrial history of the coastal area of the Arthur Kill from Elizabeth, Union County, to Carteret, Middlesex County. The period of significance is from 1895, the year of incorporation, to 1960, the last year of industrial passenger service on the line (Baer, Coxey, Schopp 1994: 367).

Application of Criteria of Effect to Sound Shore Railroad

The proposed project will have no adverse effect on the Sound Shore Railroad. The Sound Shore Railroad is located southwest of the existing Goethals Bridge alignment in the industrial Bayway area. This former railroad wound its way from the Perth Amboy and Elizabethport Branch of the Central Railroad of New Jersey, around the various warehouses and industrial buildings, over Morses Creek and southward along the Chemical Coast near the Arthur Kill. The railroad is over 1,300 feet from the main spans of the Goethals Bridge and approximately 875 feet at its closes point to the approach spans (Photo 20, Sound Shore Railroad crossing over Morses Creek is in the foreground).

The four proposed alternatives of the Goethals Bridge Replacement project: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*; will be located at the same location and/or near the same location as the existing Goethals Bridge. None of the proposed alternatives will cause physical destruction or damage to the Sound Shore Railroad. Under the proposed alternatives, the proposed project will not alter the Sound Shore Railroad, will not move the location of the buildings or any of the character defining features of the Sound Shore Railroad. The proposed Goethals Bridge Replacement project will not change the character of the property's use or physical features within the property's setting that contribute to its historic significance. Although the proposed project would alter the area visually, the introduction of a new visual element will not diminish the integrity of the property's significant historic features that contribute to the eligibility of Sound Shore Railroad and therefore, the Goethals Bridge Replacement project will have no adverse effect on Sound Shore Railroad.

Photo 19: Sound Shore Railroad at the Morses Creek Bridge View South

Photo 20: Goethals Bridge 1991 View Northeast; Source: HAER NY-305, Photographer Jet Lowe

5.0 HISTORIC ARCHITECTURAL RESOURCES WITHIN THE NEW YORK APE

5.1 Data Summary

A survey and evaluation of historic architectural resources within the New York section of the APE was undertaken in 2007. One resource, the Goethals Bridge, is eligible for or listed in the National Register of Historic Places within the New York APE. This bridge spans the Arthur Kill between New York and New Jersey and is described in Section 4.2 under Historic Architectural Resources within the New Jersey APE, above.

Table 2: Historic Architectural Resources within the New York Architectural APE

No	Resource Name/Address	Block/ Lot	Date Built	Eligibility Status	Effects Assessment
1.	Goethals Bridge	N/A	1928	SHPO Opinion Eligible 2/14/1995 (NJ) 1/25/1995 (NY)	Demolition Finding of **Adverse Effect**

5.2 Application of Criteria of Adverse Effect

Goethals Bridge, Elizabeth, New Jersey and Staten Island, New York; (Photo 2)

The Goethals Bridge has opinions of eligibility from both New York and New Jersey SHPOs. Effects to the Goethals Bridge are discussed in Section 4.2 under Historic Architectural Resources within the New Jersey APE, above.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The implementing regulations of Section 106 of the National Historic Preservation Act require federal agencies to consult with the respective state historic preservation office(s) to identify historic properties listed in or eligible for listing in the National Register potentially affected by the undertaking, to assess the undertaking's effects on the listed or eligible National Register historic properties, and to avoid, minimize, or mitigate any adverse effects on historic properties. The EIS scoping process was initiated in September 2004. Section 106 consultation with the New York and New Jersey SHPOs regarding the historic resources in the Goethals Bridge Replacement Project area has been ongoing since June 2005. The recommendations of this report are outlined below.

6.1 Archaeology

The tested portions of the New Jersey and the New York sections of the archaeological APE do not contain any NRHP eligible or listed prehistoric or historic archaeological resources that will be affected by the four Build Alternatives. As a result, it is not necessary to consider any alternatives for avoidance or mitigation of effects to archaeological resources associated with the entirety of the two Southern Build Alternatives and the main construction corridor of the two Northern Build Alternatives. The area of the proposed Goethals Road North relocation associated with the two Northern Build Alternatives, however, has not been assessed for archaeological potential nor investigated for the presence of archaeological resources. If either of the Northern Build Alternatives is selected, then these areas will require an archaeological assessment and/or investigation and continued consultation with the NYSOPRHP will be necessary to determine if NRHP eligible archaeological resources are present within the areas of roadway relocations. If such eligible resources exist within the area of the relocation of Goethals Road North, then further consultation and coordination with the NYSOPRHP would be required to formulate appropriate measures to avoid, minimize, or mitigate impacts to the resource(s). These measures would only be required if one of the Northern Build Alternatives is selected as the applicant's proposed action.

Any construction staging areas beyond the limits of the New Jersey or New York archaeological APE have not been assessed for archaeological potential or investigated for the presence of archaeological resources and may require an archaeological assessment and/or investigation as well as continued consultation with the SHPOs.

6.2 Historic Architecture

This report evaluated the ***criteria of adverse effect*** for the 11 historic properties identified in the *Goethals Bridge Replacement APEs* that are eligible for listing or listed in the National Register. The criteria of adverse effect was applied to the four proposed alternatives currently under consideration: 1. *New Alignment South Alternative*; 2. *New Alignment North Alternative*; 3. *Existing Alignment South Alternative*; and 4. *Existing Alignment North Alternative*. The proposed project will have a finding of Adverse Effect on three historic properties, the Goethals Bridge, the Staten Island Railroad Historic District, and the Staten Island Railway Lift Truss Bridge over Arthur Kill. Although eight resources will have some degree of visual effect, these effects are not sufficient to diminish the integrity of the properties' significant historic features or setting and, as a result, do not alter the characteristics of the historic properties that qualify them for inclusion in or eligibility for listing in the National Register of Historic Places. A finding of No Adverse Effect is recommended for these eight properties. Visual effects to historic properties, not recommended as adverse effects, such as the South Front Street over Elizabeth River, South First Street over Elizabeth River, and Mattano Park will result in a change to the scenic, visual, and/or aesthetic experience.

6.3 Mitigation

The proposed Goethals Bridge Replacement project will have an Adverse Effect on the National Register eligible Goethals Bridge, the Staten Island Railroad Historic District, and the Staten Island Railway Lift Truss Bridge over Arthur Kill, as a result of the proposed demolition and replacement of the historic structure. A review of the

alternatives and subsequent mitigation initiatives will be coordinated with the SHPOs. Suggestions of possible mitigation measures are described below:

Historic American Engineering Record (HAER)

The Goethals Bridge and its companion structure, the Outerbridge Crossing Bridge, represent the earliest projects undertaken by the newly formed Port of New York Authority (now called the Port Authority of New York and New Jersey). The two bridges were both completed in 1928 and provide crossings between New Jersey and Staten Island over the Arthur Kill. Likewise, both bridges were recognized as significant historic structures and were photo-documented in 1991 for the Historic American Engineering Record (HAER NY-304, NY-305 1991).

Historic American Buildings Survey and the Historic American Engineering Record (HABS/HAER, respectively) provide documentation, usually in the form of measured drawings, photographs, and written data, of America's most noteworthy historic buildings, structures, and objects. Documentation can also include other media that help to illustrate aspects of history or process associated with the resource. For mitigation documentation projects, generally, Level I documentation, which includes measured drawings depicting existing or historic conditions; large-format photographs of the resource, existing drawings, and/or historic views; and a detailed written history and description; is required for nationally significant buildings and structures.

Signature Bridge

The Goethals Bridge is a monumental structure of historic and scenic significance. Aesthetics concern the visual quality of a property and the scenic view associated with a property, not only in terms of the character of visual experience, but also with its excellence. Proposed replacement of a monumental structure, such as the Goethals Bridge, has long-term scenic and other visual impacts to surrounding historic resources. A new *signature* bridge, design of which is should be not only exemplary, but should also be compatible with other historic properties in overall plan, concept, scale, materials, and feeling, should be considered to replace the existing structure. Conceptual examples of possible bridge types currently being considered are the tied-arch bridge and the cable-stayed bridge, which are depicted in Photos 21 and 22, respectively. A review of proposed replacement bridge designs are anticipated to be undertaken by the NYSOPRHP and NJHPO.

Educational Materials

Educational materials, such as a booklet documenting the Goethals & Outerbridge Crossing Bridges—Highway Bridges of the Arthur Kill, can be produced for circulation to libraries, historical societies, and other educational facilities. A special educational video or story about the Goethals Bridge, its technology, people, and era, can be developed and posted on a website about the bridge. As a resource for educators, materials can be structured in such as way as to include lesson plans that support social studies content and learning standards, with grade appropriate content broken into specific grade groupings. Lesson plans might also include related transportation history and the impact of the automobile on our environment.

Displays, such as exhibits or panels that depict the history of the bridge(s), can be developed. Exhibit materials might include elements salvaged from the bridge that are incorporated into three-dimensional display modules with corresponding photographs and exhibit panels. Development of educational displays would be undertaken in cooperation with NYSOPRHP and NJHPO.

Photo 21: Conceptual Rendering of Tied-Arch Bridge at the Goethals Bridge Crossing View Northwest

Photo 22: Conceptual Rendering of a Cable-Stayed Bridge at the Goethals Bridge Crossing View Northwest

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