

21. MIDWOOD POOL BRIDGE

INTRODUCTION

The Midwood Pool Bridge, (See Photo 178), was designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from local fieldstones gathered by workers building the park.

The Midwood Pool Bridge is a rustic fieldstone footbridge. This is one of four rustic arched footbridges over Branch Brook, of which three are constructed from fieldstones and boulders and one from rough-cut and tooled brownstone. This bridge is also one of two arched footbridges that have built in benches. Larger boulders, approximately 3' – 0" in diameter serve as copingstones atop the cheek walls and compose arches on each side of the bridge. Smaller fieldstones, approximately 12" in diameter, are laid in a rustic pattern and comprise the vertical face of the cheek walls. An arched concrete culvert lines the passage under the bridge. The top of the arch is exposed above the bridge's deck and displays signs of cracking and spalling. The approximate height of the north and south cheek walls is 2' – 4" above the bridge's deck.

Facing the bridge's deck and built into each cheek wall is a bench constructed with bluestone and concrete seats. Over time much of the original bluestone has been replaced with concrete. Coping stones atop the cheek walls form the backs of each bench. Wide mortar joints varying between 1" – 3" have been repointed with mortars of different colors and textures and are in good condition. Currently foot and bicycle traffic travels over the bridge on an unpaved dirt path that is in poor condition. Many of the boulders and both benches are

covered with organic growth including moss, lichen and plants. (See Photo 179). Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Midwood Pool Bridge.

DESCRIPTION/CONDITIONS

SITE

The footbridge crosses over the southern part of Midwood Pool. The direction of the dirt pathway over the bridge is east/west and the bridge is at a roughly perpendicular axis to the brook. The bridge and site are slightly elevated above the surrounding grade. Examinations of the site reveal that the original bridge deck paving is gone. The soil on the bridge's deck and around the site has eroded significantly over time exposing the original rock and soil fill material as well as the top of the concrete arch at the bridge's deck. This rock and dirt fill has compacted and is now the new bridge deck surface. No remnants of the original paving exist, however preliminary investigations of other park bridges reveal that it may have been brick or stone pavers.

The bridge's deck is extremely rough and uneven with large exposed stones, tree roots and plant growth on its surface. These uneven and eroded surfaces result in poor drainage, further eroding dirt and exposing more roots and rock fill. Water runoff from the bridge has eroded a substantial amount of dirt and mortar joints at the cheek wall bases, making the joints susceptible to water penetration and the adverse effects of freeze-thaw cycles. There is a significant amount of vegetation and garbage around the site. So many trees and bushes cover the bridge that it is not visible from the path. (See Photo 180). Trees and large bushes within 5 – 0" of the bridge need to be

examined to determine which roots are causing damage to the bridge. Within 10' – 0" of the bridge along both sides of the brook and Midwood Pool there is a considerable amount of plant growth, soil sedimentation, and garbage including weeds, bottles, cans and plastic bags that need to be removed.

MASONRY AND CONCRETE

The Midwood Pool Bridge is a fieldstone arched masonry footbridge constructed in a rustic design. Arched fieldstone openings on each side of the bridge lead to the concrete arched underside. This arched underside and the interior surfaces of the south fieldstone arch are covered with organic growth and efflorescence caused by water penetrating from above. In certain areas approximately 2"-3" of material at the base of the arched concrete culvert has been completely eroded by the scouring action of the stream. On the bridge's deck the exposed top of the concrete arch is significantly eroded and large stone aggregate, approximately 1"-3" in diameter is visible. (See Photo 181). This concrete arch is also extremely worn and covered with moss. The bridge's original mortar may have more closely resembled the color and texture of the fieldstone. Over time the bridge has been completely repointed with mortars of varying colors and textures; several campaigns are apparent. This repointing appears to have changed the width of the original mortar joints, widening them with each consecutive repointing. Though in good condition overall, 25% of the mortar is cracked, including hairline cracks around the stones. Repointing is needed especially along the bases of the north and south cheek walls facing the bridge's deck. The fieldstones at the west end of the north bench are missing while the fieldstones at the east end of the south bench have been replaced with concrete. The built-in benches were originally constructed with bluestone seats. Currently 40% of the south bench, (see Photo 181),

and 50% of the north bench, (see Photo 182), have been replaced with concrete seats that are beginning to show signs of spalling and organic growth. The bed joint that attaches the bluestone seat to the south bench is open and exposed. Areas of the remaining bluestone are spalling and cracking. Both the north and south vertical faces of the bridge are in good condition but are covered with organic growth including moss, lichen and plants (See Photo 183).

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the footbridge structure, paying particular attention to the concrete arch to determine its structural integrity. Expose the concrete arch footings (halting the flow of water as necessary) to examine their condition. Probe the top of the arch, exposing some concealed areas to determine its structural integrity.

2. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.3 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.4 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.5 Provide shoring and bracing as needed for all removals and as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF FOOTBRIDGE

- 2.6 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.7 Remove trees and large plants within 5' of footbridge based on consultation with landscape architect and in accordance with historic planting plan.
- 2.8 Recreate historical site paving, based on detailed research of historical documents and analysis of current paving covering path and bridge deck. Work to include the removal of all roots from paving area and provisions of appropriate base materials. Plans to be approved by SHPO.
- 2.9 Provide site planting, based on historic planting plans, including soil adjustments to restore the grade to historic levels and stabilize the earthen banks adjacent to the cheek walls.
- 2.10 Provide grading and drainage to the site to prevent erosion and manage storm water runoff.
- 2.11 Dispose of all removed earth and dredge materials, legally off-site.

DIVISION 3: CONCRETE

- 3.2 Concrete
 - 3.2.1 Repair concrete arched culvert and footings based on detailed inspection of current conditions.
 - 3.2.2 Provide water sealants and coatings at topside of arch as required, based on probes of arch.
 - 3.2.3 Examine and inspect the current conditions of the concrete foundation under the bridge. Based on that inspection, make recommendations for repair as required.

DIVISION 4: MASONRY

- 4.1 Stone
 - 4.1.1 Remove and replace all non-matching, reconstructed concrete seating with bluestone to match as closely as possible, existing historic bluestone in size, color, and texture.
 - 4.1.2 Replace all missing fieldstone and bench ends with new fieldstones to match existing fieldstone in size, color, and texture.
 - 4.1.3 Patch selected damaged historic fieldstone and bluestone with restoration mortar to match existing historic fieldstone and bluestone in color and texture.
 - 4.1.4 Rake and repoint selected fieldstone and bluestone mortar joints with mortar to match original in size, color and texture based on scientific sampling and historic resources; soft mortars to minimize hairline cracking.
 - 4.1.5 Clean all fieldstone and bluestone masonry and mortar joints including removing all plant growth, moss and lichen as well as all graffiti.
 - 4.1.6 Provide biocide to remove and limit future organic growth.



Photo 178
View east towards the Midwood Pool Bridge; note the vegetation including, trees, bushes and vines overgrowing the site.



Photo 179
The south bench and copingstones of the bridge; note the plants growing in between the fieldstones and the reconstructed concrete benches.



Photo 180
View west towards the bridge; note that the pathway and bridge are almost completely covered by vegetation.



Photo 181
The south side of the bridge showing the built-in bench and concrete arch; note that a large section of the bench in this photo has been replaced by concrete and that the bluestone in the lower right corner is cracked.



Photo 182
The north side of the bridge and built-in bench; note the vegetation and garbage covering the path and bench.



Photo 183
The vertical face of the south cheek wall; note the rustic fieldstone design of the bridge and concrete arch.

22. MIDWOOD DRIVE BRIDGE

INTRODUCTION

The Midwood Drive Bridge, (see Photo 184), was designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from local fieldstones gathered by workers building the park.

The Midwood Drive Bridge is a rustic fieldstone bridge. This bridge is one of two very wide and relatively flat rustic fieldstone bridges. Originally both these bridges contained roadways that connected the east/west park drives. VEP Associates, Engineers probably removed both of these roadways during a 1981 renovation of the park road and replaced them with the current asphalt pathway. The other fieldstone bridges are much narrower, arched and more in keeping with traditional footbridge design. The design of this bridge consists of two cheek walls constructed from fieldstones set in mortar connected by a concrete box culvert spanning between them. A large rectangular granite slab spans the entrance to the culvert on each cheek wall. Larger boulders, approximately 3' – 0" in diameter serve as copingstones and are interspersed with smaller fieldstones, approximately 12" in diameter throughout cheek walls.

The approximate height of the north and south cheek walls is between 5' – 0" and 5' – 5" at their highest points above the surrounding grade. Both walls are approximately 2' – 0" wide. The south cheek wall begins approximately 20' – 0" west of the north cheek wall. Currently foot and bicycle traffic travel over the bridge on a paved asphalt path 9' – 0" wide, that is in good condition. (See Photo 185). Between the pathway and each cheek wall are areas of grass. Many

of the fieldstones are covered with organic growth including moss, lichen and plants as well as graffiti. (See Photo 186). Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Midwood Drive Bridge.

DESCRIPTION/CONDITIONS

SITE

The footbridge crosses over Branch Brook directly north of the Midwood Pool. The paved asphalt pathway crosses roughly east/west over the bridge at a diagonal axis to the brook. The bridge is approximately 36' – 0" wide. Grass covered areas are to the south and north of the asphalt pathway. (See Photo 185). Significant amounts of vegetation, including bushes, weeds and vines are growing on the bridge and around the site. (See Photos 187, 188). Trees and large bushes within 5' – 0" of the bridge need to be examined to determine which roots are causing damage to the bridge. Within 10' – 0" of the bridge along both sides of the brook, there is a considerable amount of plant growth and garbage including weeds, bottles, cans and plastic bags that need to be removed. The stream has silted up and debris is blocking the north opening to the concrete box culvert. (See Photos 189, 190).

MASONRY AND CONCRETE

The Midwood Drive Bridge is a fieldstone, lintel masonry bridge constructed in a rustic design. The bridge's walls are constructed from fieldstone set in mortar. A large horizontal granite lintel, approximately 6' – 0" in length, spans the opening on each side of

the bridge leading to the concrete box culvert. The bottom of the lintel and surfaces of the box culvert are covered with organic growth and efflorescence caused by water penetrating from above. About 3"-4" of material at the base of the concrete box culvert has been completely eroded by scouring action of the stream. Larger boulders, approximately 3' - 0" in diameter serve as copingstones atop the cheek walls. These boulders are interspersed with smaller fieldstones, approximately 12" in diameter throughout rest of the bridge in an alternating design. (See Photo 191). The cheek walls of this bridge are taller than those on the other fieldstone bridges; the distance from the top of the north cheek wall to the water line is 9' - 6". In contrast, the distance on the other bridges is approximately 5' - 0" to 6' - 0". (See Historic Image 2, Photo 184).

The surface of the fieldstone has spalled on both the north and south cheek walls. The bridge's original mortar may have more closely resembled the color and texture of the fieldstone. Over time the bridge has been completely repointed with mortars of varying colors and textures; several campaigns are apparent. This repointing appears to have changed the width of the original mortar joints, widening them with each consecutive repointing. Open and exposed masonry joints appear along both cheek walls. (See Photos 192, 193). Surfaces of each cheek wall facing the bridge's deck are covered with weeds, vines and moss. The exterior vertical face of each cheek wall is covered with organic growth including moss and lichen. (See Photo 194).

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the footbridge structure, paying particular attention to the concrete box culvert to determine its structural integrity. Probe the top of the culvert, exposing some concealed areas to determine its structural integrity.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing as needed for all removals and as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF FOOTBRIDGE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of footbridge based on consultation with landscape architect and in accordance with historic planting plans.
- 2.3 Provide site planting, based on historic planting plans, including soil adjustments to restore the grade to historic levels and stabilize the earthen banks adjacent to the cheek walls.
- 2.4 Provide grading and drainage to the site to prevent erosion and manage storm water runoff.
- 2.5 Dredge the brook to allow for the free movement of water under the bridge.

- 2.6 Dispose of all removed earth and dredge materials, legally, off-site.

DIVISION 3: CONCRETE

3.1 Concrete

- 3.1.1 Repair concrete box culvert and footings based on detailed inspection of current conditions.
- 3.1.2 Provide water sealants and coatings at the topside of the culvert, as required based on probes of culvert.
- 3.1.3 Examine and inspect the current conditions of the concrete foundation under the bridge. Based on that inspection, make recommendations for repair as required.

DIVISION 4: MASONRY

4.2 Stone

- 4.2.2 Patch selected damaged historic fieldstone with restoration mortar to match existing historic fieldstone in color and texture.
- 4.2.3 Rake and repoint selected fieldstone mortar joints with mortar to match original in size, color and texture based on scientific sampling; soft mortars to minimize hairline cracking. Use historic photos, drawings, and specifications and field investigation to determine proper joint size and type.
- 4.2.4 Clean all fieldstone masonry and mortar joints including removing all plant growth, moss and lichen as well as all graffiti.
- 4.2.5 Provide biocide to remove and limit future organic growth.



Historic Image 4
A hand colored photograph of the Midwood Drive Bridge around 1900; note the limited plantings and number of stones exposed at the channel.



Photo 184
View looking north towards the Midwood Drive Bridge; note the difference in the plant growth when compared with original image 25.



Photo 185
Asphalt path and grass-covered areas between the cheek walls; note the width of the bridge and the good condition of the pathway.



Photo 186
The south cheek wall of the bridge; note that plants are growing over most of the fieldstones.



Photo 187
The north cheek wall; note the vegetation and graffiti covering this wall.



Photo 188
Detail of copingstones and mortar joints on the north cheek wall; note the graffiti and plant growth.



Photo 189
The north cheek wall of the bridge showing the flat granite lintel that spans the opening to the concrete underside; note the significant amount of debris and vegetation around the site and the sediment deposits under the bridge covering the original rock work.



Photo 190
Debris and sedimentation clogging the culvert on the north side; note the organic growth covering the fieldstones and mortar joints.



Photo 191
The design of alternating areas of larger and smaller stones is visible on the south cheek wall.



Photo 192
Visible signs of graffiti, erosion and spalled, cracked mortar on the north cheek wall.



Photo 193
Cracked mortar along the north cheek wall; note the width of the mortar joints.



Photo 194
The vertical face of the north cheek wall; note the moss growing on the fieldstone and mortar surfaces.

23. WEIR 2

INTRODUCTION

Within the northern division of Branch Brook Park there are 4 weirs that were built to keep an adequate supply of water in the brook at all times. These were designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from concrete and local fieldstones. According to John Olmsted, each weir was to be constructed from concrete and fieldstone, having a gently sloping face so that water flowing over the surface formed a ripple or rapid. Although the water course and bridges were built in accordance with the Olmsted plans, the four weirs were built with vertical faces, contrary to the firm's directions. Today, what do exist are 4 weirs with vertical faces.

The weirs are each approximately 14' - 0" in length and 3' - 0" in width. The vertical dam across the brook was constructed with concrete. The sides of each weir were built into the banks of the brook, constructed with concrete and covered with local fieldstone. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments for Weir 2 in the northern division of Branch Brook Park.

DESCRIPTION/CONDITIONS

SITES

Weir 2, (see Photo 195), is directly south of the Edgewood Pool and halfway between the Midwood Drive Bridge and the Brownstone

Bench Bridge. There is significant erosion around this weir's embankments, where the brook now overflows during heavy rains. (See Photo 196). Bushes grow along the embankment, which is also littered with fallen tree branches.

CONCRETE / MASONRY

Weir 2, similar to the other weirs, is constructed from concrete and fieldstone. The main vertical wall of the weir is constructed from concrete, while each side of the weir that is built into the bank of the brook is constructed from concrete covered with fieldstones. Weir 2 is constructed from concrete and fieldstones. Most of the water from the brook flows around the east side of this weir, where significant erosion has occurred, (see Photo 196). The concrete on this weir, visible about 8" above the water, has spalled and cracked; many of the original fieldstones that surround it are either loose or missing.

WORK PLAN

The work plan for all 4 weirs is part of the overall plan for reconstruction of the Branch Brook Park Waterway. This process involves reconstructing all the historic water features to the period of significance (1898-1937) determined elsewhere in the cultural landscape report. Archeological investigation may be required to determine the original configurations. Design by a hydraulic engineer will be required. The reconstruction process involves dredging the brook of sediments and regrading the eroded banks of the brook. The following rehabilitation Plan highlights the technical restoration considerations.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Selectively remove for reinstallation in accordance with SHPO approved plans:
 - 1.3.1 Stone masonry as required for masonry repairs.
- 4.4 Rake and repoint all stone mortar joints and provide for through-wall drainage.

DIVISION 2: SITE WORK – WITHIN 10' OF WEIR

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of weir based on consultation with the landscape architect.
- 2.3 Provide site planting based on historic planting plans including additional soil to restore the grade to historic levels and stabilize the earthen banks adjacent to the wing walls and above the river's concrete retaining walls.
- 2.4 Provide grading and drainage to the site to prevent erosion and manage storm water.

DIVISION 3: CONCRETE

- 3.1 Repair all damaged concrete.

DIVISION 4: MASONRY

- 4.1 Replace all severely deteriorated stone with new stone to match existing historic in size, color and texture.
- 4.2 Reset displaced stone.
- 4.3 Provide new stone to match existing historic stone in type, size, color and texture to replace missing embankment stones.



Photo 195
Weir 2 is constructed from concrete and has boulders set into concrete on each side.



Photo 196
Water flowing around the dam to the east.



Photo 197
Large local fieldstones line the upstream banks.

24. BROWNSTONE BENCH BRIDGE

INTRODUCTION

The Brownstone Bench Bridge, (see Photo 198, Historic Image 3), was designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from local brownstone.

The Brownstone Bench Bridge is a rustic brownstone arched footbridge that rests on a concrete foundation. This bridge is one of four rustic arched footbridges over Branch Brook and the only arched bridge constructed from brownstone. Superimposed double arched openings support cheek walls and benches on both sides of the bridge. Each cheek wall is constructed from rough cut, random ashlar, brownstone capped by seven large copingstones. Facing the bridge's deck and built into each cheek wall is a bench constructed from six large blocks of brownstone. Copingstones atop the cheek walls form the backs of each bench. Each cheek wall and bench is terminated by large brownstone blocks, (see Photo 199); four in total. Most of the bridge's brownstone blocks are covered with and discolored by organic growth. Currently foot and bicycle traffic crosses the bridge on an unpaved dirt path, 10' – 0" wide, that is in poor condition. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Brownstone Bench Bridge.

DESCRIPTION/CONDITIONS

SITE

The Brownstone Bench Bridge crosses over Branch Brook directly north of the Edgewood Pool. (See Photo 200). The direction of the dirt pathway over the bridge is east/west, and the bridge is at a roughly perpendicular axis to the brook. The bridge and site are slightly elevated above the surrounding grade. Examinations of the site reveal the path within about 30' – 0" of the bridge as well as the bridge deck paving and original grading of the site has eroded significantly. This has exposed the bridge's foundation and the original rock and soil fill material on the bridge's deck. (See Photo 198). This rock and dirt fill has compacted and is now the new bridge deck surface. No remnants of the original paving exist; however, preliminary investigations of other park bridges reveal that it may have been brick or stone pavers. The bridge's deck is extremely rough and uneven with large exposed stones, tree roots and plant growth on its surface. This uneven and eroded surface results in poor drainage and pooling water, causing erosion underneath the bench on the south side of the bridge. This has led to settlement and complete cracking of one brownstone block. Water on bridge surfaces has migrated through brownstone, mortar joints and the bridge deck, causing mortar erosion and spalling brownstone as well as efflorescence and organic growth on the underside of the bridge.

Water running off the bridge's deck is eroding a substantial amount of dirt from the bases of two large brownstone blocks at each end of the north bench and cheek wall. This has exposed their concrete foundations as well as large rock fill and roots. (See Photo 199). This erosion and runoff continues along the base of the north cheek wall, exposing the concrete foundations, eroding dirt banks and mortar joints and spalling brownstone. There is a significant amount of vegetation and garbage around the site. Trees and large bushes

within 5' – 0" of the bridge need to be examined to determine which roots are causing damage to the bridge. Within 10' – 0" of the bridge, along both sides of the brook, there is a considerable amount of plant growth and garbage including weeds, bottles, cans and plastic bags that need to be removed.

MASONRY AND CONCRETE

The Brownstone Bench Bridge is a rustic brownstone arched footbridge. Superimposed double arched openings support cheek walls and benches on both sides of the bridge and lead to the arched concrete culvert under the bridge. (See Photos 201, 202, 209). About 3"-4" of material at the base of the arched concrete culvert has been completely eroded by the scouring action of the stream. This bridge originally had sandy, cream-colored mortar joints. Over time the bridge has been completely repointed with mortars of varying colors and textures. Recently both arches have been repointed with a harder mortar, whiter than the others. The larger arch supports the cheek walls on either side of the bridge and is capped by large copingstones, while the smaller arch supports the brownstone benches. The brownstone blocks that comprise the benches and copingstones have a tooled stippled finish that displays signs of excessive wear and weathering. Each copingstone is approximately 3' – 0" to 4' – 7" in length and most are cracking, spalling or delaminating. (See Photo 203). A copingstone atop the north cheek wall has cracked in half, with the crack lining up to a mortar joint on the bench. (See Photo 205). Examination of this mortar joint and copingstone reveal that a combination of water penetration, adverse effects of freeze-thaw cycles and uneven settling of the cheek wall probably caused the cracking. Another copingstone atop the north cheek wall contains significant spalling adjacent to an open and exposed mortar joint. (See Photo 206).

Six large brownstone blocks, approximately 20" in width and 3' – 0" to 5' – 0" in length comprise benches on each side of the bridge. Erosion and uneven settling has caused a brownstone block on the south bench to crack completely. (See Photo 207). The large vertical crack is approximately 3/8" wide. There are also smaller vertical and horizontal cracks on this block. Most mortar joints are typically 1" – 1 1/4" wide and in poor condition. (See Photo 208). One hundred percent of the mortar joints on the benches and copingstones need repointing. Mortar has eroded from 60% of the joints while in others there is approximately a 1/8" to 1/4" gap between the mortar and brownstone, evidencing movement of the stone or severe mortar shrinkage. Mortar joints that have not completely failed are covered with hairline cracks or organic growth.

The brownstone blocks and mortar joints at the base of each arch are eroding, cracking and spalling due to rising damp and the adverse effects of freeze-thaw cycles. Within 12" of the current water level large sections of brownstone and mortar are missing or severely eroded. (See Photos 201, 202). Both arches have been repointed with non-matching mortar that is whiter than the repointing on the cheek wall. (See Photo 209). The bridge's north and south cheek walls are constructed from rough-cut, random ashlar brownstone. The condition of the south cheek wall is poor with about 70% of the brownstone blocks displaying hairline cracking, spalling or scaling. (See Photo 209). There is significant vertical and horizontal cracking through 10% of the brownstone blocks. About 50% of the mortar joints on this wall are open and exposed or display hairline cracks. Copingstones surmounting this wall are severely delaminating along the bedding plane. (See Photo 207).

One hundred percent of the masonry joints on the north cheek wall need to be repointed. (See Photo 210). All are open and exposed or

missing significant amounts of mortar within approximately 12" of the concrete foundation, evidencing erosion from water runoff and the scouring action of the stream. (See Photo 211). Although there has been remedial patching of the masonry joints on this cheek wall, that mortar has failed and eroded from the joints. Significant cracking, spalling and scaling of brownstone is occurring on the north cheek wall. (See Photo 211). Many blocks have horizontal cracking along their entire width as well as spalling along their edges. The concrete foundation at the base of the north cheek wall is exposed, cracked, eroded and detached from the bottom course of brownstone masonry. (See Photo 212).

Brownstone blocks and mortar joints at the base of the double arch on the north side of the bridge are eroding, cracking and spalling due to rising damp and the adverse effects of freeze-thaw cycles. An exterior arch stone has dropped on the north side of the bridge, causing settlement above and likely contributing to cracking of a copingstone atop the cheek wall. (See Photo 205). Both arches have been repointed with non-matching mortar whiter than the repointing on the cheek wall. All copingstones extend approximately 3" out from the vertical face of cheek walls. There is significant spalling at the lower edge of the projecting copingstones surmounting the north cheek wall. The benches, copingstones, cheek walls and end blocks are covered with graffiti or organic growth including moss, lichen and plants, discoloring the brownstone surfaces and turning them green.

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the footbridge structure, paying particular attention to the concrete arch to determine its structural integrity.

Expose the concrete arch footings (halting the flow of water, as necessary) to examine their condition. Probe the top of the arch, exposing some concealed areas to determine its structural integrity.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing as needed for all removals and as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF FOOTBRIDGE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of footbridge based on consultation with a landscape architect.
- 2.3 Recreate historical site paving, based on detailed research of historical documents and analysis of current paving covering path and bridge deck. Work to include the removal of all roots from paving area and provisions of appropriate base materials. Plans to be approved by SHPO.
- 2.4 Provide site planting, based on historic planting plans including adjustments to soil to restore the grade to historic levels and stabilize the earthen banks adjacent to the cheek walls.
- 2.5 Provide grading and drainage to the site to prevent erosion and manage storm water runoff.

DIVISION 3: CONCRETE

- 3.1 Concrete
 - 3.1.1 Repair concrete arched culvert and footings based on detailed inspection of current conditions.
 - 3.1.2 Provide water sealants and coatings at top side of arch as required, based on probes of arch.
 - 3.1.3 Repair the exposed concrete foundation under the north cheek wall based on a detailed inspection of the current conditions and consultations with a structural engineer.
 - 3.1.4 Examine and inspect the current condition of the concrete foundation under the south cheek wall. Based on that inspection, make recommendations for repair as required.

DIVISION 4: MASONRY

- 4.1 Stone
 - 4.1.1 Reset displaced north arch stone.
 - 4.1.2 Replace all severely deteriorated brownstone with new brownstone to match existing historic brownstone in size, color and texture.
 - 4.1.3 Patch selected damaged historic brownstone with restoration mortar to match existing historic brownstone in color and texture.
 - 4.1.4 Repair cracking in brownstone due to settling and structural damage with stainless steel rods and restoration mortar. Repair to match existing historic brownstone in color and texture.
 - 4.1.5 Rake and repoint all brownstone mortar joints, except at exterior copingstones with mortar to match original in size, color and texture based on scientific sampling and historic resources.

- 4.1.6 Retool selected brownstone surfaces restoring them to a facsimile of their original condition based on historic images and documentation.
- 4.1.7 Clean all fieldstone masonry and mortar joints including removing all plant growth, moss and lichen as well as all graffiti.
- 4.1.8 Provide biocide to remove and limit future organic growth.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Provide backer rods and sealant at the tops and side of all copingstones. Sealant to match original mortar color.



Historic Image 5
This hand colored photograph, circa 1900, is from the collection of Essex County Parks.



Photo 198
View looking east over the Brownstone Bench Bridge; note the rough and uneven condition of the bridge's deck.



Photo 199
One of the large brownstone blocks at the west end of the north cheek Wall; note the exposed concrete foundation, and the rocks and roots suggesting significant water runoff causing erosion.



Photo 200
The brownstone bench bridge north of the Edgewood pool.



Photo 201
The two brownstone arches on the south side of the bridge; note the efflorescence and water staining of the brownstone blocks.



Photo 202
The brownstone arches and concrete archway under the bridge; note the significant erosion of the brownstone blocks, mortar joints and the concrete arch.



Photo 203
The south bench, copingstones and end blocks of the bridge; note the compacted rock and soil fill that now serves as the bridge's deck, as well as the organic growth at the base of bridge.



Photo 204
This large crack, approximately 3/8" wide, goes entirely through the brownstone block; note the eroded mortar joints, brownstone and soil at the base of the block.



Photo 205
This copingstone is cracked in half; note how the crack matches up with the open and exposed mortar joint on the bench, suggesting that cracking may have been exacerbated by water infiltration and freeze-thaw cycles.



Photo 206
Significant spalling on the corner of a copingstone; note the open and exposed mortar joints with plants growing out of most of them.



Photo 207
Spalling and delaminating of brownstone on the south copingstones of the bridge; note that cracking and delaminating occurs along the bedding planes of the brownstone.



Photo 208
An open and exposed mortar joint between two copingstones at the top of the cheek wall; note the spalling along the edges of the stone and the significant amount of missing mortar.



Photo 209
The rough-cut, random ashlar stonework on the south side of the bridge; note the varying types of mortar used in the joints; note that only 11 whole stones are visible along the arch.



Photo 210
Open and exposed mortar joints on the north cheek wall; note the graffiti and organic growth.



Photo 211
Spalling and cracking stone at the base of the north cheek wall;
note the organic growth at the bottom of the photograph.



Photo 212
Cracked and eroded concrete foundation at the base of the north
cheek wall.

25. THE BALLANTINE GATE

INTRODUCTION

The Ballantine Gate, designed by Carrere & Hastings Architects (28 East 41st Street, NYC) in 1899 is sited in the northern division of the park. The gate is located at the intersection of Lake Street and Ballantine Parkway and serves as a formal entrance to the park. (See Photo 213). It is composed of two symmetrical sites divided by a road. Robert F. Ballantine, scion of the brewing family, donated funds for the construction of the gate. According to historical documents, original designs for the areas around the site included a sand court, wading pool, shelter and children's lawn with play equipment. These additional amenities were never constructed and no plans exist.

Both pavilions have 4section, asphalt shingled, steeply sloped hip roofs that have a kick (an upward curve) at the eave. Both roofs are framed with heavy timber. Large amounts of limestone trim on both pavilions as well as sections of the limestone piers are covered with paint that was not completely removed. This paint now darkens and discolors large sections of limestone. The discoloration is exacerbated by an anti-graffiti coating. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Ballantine Gate.

DESCRIPTION/CONDITIONS

SITE

The Ballantine Gate is located in the northern division of the park at the intersection of Lake Street and Ballantine Parkway. An asphalt-paved roadway leading from the intersection to the main park road divides the site in half. The buildings and structures of the site include: two brick pavilions with limestone and granite trim, a bifold wrought iron gate, two elaborately carved limestone piers, two brick and limestone flat archways, two, four sectioned wrought iron fences, arcing outwards towards Lake Street divided by five brick and limestone posts atop granite curbs and brownstone retaining walls and ten granite bollards with a heavy iron link chain between them. (See Photos 214, 215). Terraced landscaping planted with flowers and shrubs lies between the bollards and wrought iron fences. Gravel covered dirt sidewalks run along the west side of Lake Street following the arc of the fences and bollards.

On the park side of the site, significant erosion occurs around the site, primarily at the bases of the pavilions and around the gravel covered sidewalks. Both pavilions have damaged gutters that are missing all their downspouts. (See Photo 216). This results in rainwater running directly off the roof and onto the ground instead of being carried by gutters and downspouts to the original subsurface drainage system. This has greatly increased site erosion below the roof perimeter of each pavilion. Two granite thresholds at the base of each archway are major trip hazards; one has heaved vertically, (see Photo 230), and soil has eroded around the other's base.(See Photo 234).

Erosion has exposed the brick foundation along the south and west walls of the north pavilion. (See Photo 217). Erosion in this area has exposed large rocks, roots and changed the grade. At the base of the south pavilion erosion has exposed a greater depth of the brick foundation causing a significant grade change south of the granite stoop. Asphalt paving between the pavilion and the main gate is

cracking and buckling caused by roof runoff, tree roots and the adverse effects of freeze-thaw cycles. Erosion has made the gravel covered dirt sidewalk east of both pavilions uneven, water pools in depressions on its surface and the grade is uneven next to the curbs on Lake Street.

BRICK AND STONE MASONRY

The walls of both pavilions are constructed from brick laid in a Flemish bond pattern with limestone trim bearing on a brick and brownstone foundation. (See Photo 213). Vertically tooled granite plinths capped by deeply concaved vertically tooled limestone base cap moldings surmount the foundations of both pavilions. The blocks that comprise the granite plinth are approximately 21" in height and vary from 30" to 50" in width. The limestone base cap is 16" in height and the blocks vary in width from 28" to 53". There are two pedimented limestone openings that pierce the base cap molding on the north and south walls. (See Photo 218). The dimensions of the bricks vary from 2 1/4" - 2 1/2" in height to 7 1/4" - 7 3/4" in width. A 13" vertically tooled limestone belt course caps the primary vertical face of the brick walls. Above this belt course on the north and south walls is another 2' - 0" of brickwork capped by a 13" vertically tooled limestone fascia. A limestone flat arch is centered above the doorway on the west wall. On the east wall a limestone flat arch is centered above a window. (See Photo 214). Above the flat arches on the east and west walls are vertically tooled limestone fascias. Massive, rusticated, tooled limestone quoins reinforce the corners of both pavilions. Each quoin is constructed from alternating blocks of flat and rounded, tooled limestone. Above the quoins on each corner of the pavilion are vertically tooled, limestone blocks similar to keystones. (See Photo 238).

The mortar joints of the brick foundation on the north pavilion are all open and exposed. (See Photos 219, 220). The north side of this pavilion has a brownstone foundation; many of its mortar joints are open and exposed. A granite stoop on the west façade of the north pavilion leads to the main door. This stoop is in good condition with some slight spalling. The brick foundation of this stoop is in poor condition, with missing bricks and eroded mortar joints. (See Photo 220). One hundred percent of the vertical and horizontal mortar joints in the granite and limestone masonry base are open and exposed. (See Photo 221) as are many of the mortar joints in the rest of the limestone trim. The brickwork is in good condition, although varying repointing campaigns are evident and non-matching grey and grey-brown mortar has been used. The base of the north wall displays areas of severe limestone and granite spalling, (See Photo 222), particularly at open vertical mortar joints due to water penetration and the adverse effects of freeze-thaw cycles.

Extending south from the north pavilion is the brick and limestone pedestrian entrance to the park. The flat archway is approximately 5' - 0" wide by 8' - 6" in height and is framed by brick and limestone masonry similar to a Gibbs surround. Slight spalling has occurred in some limestone archway trim. At the base of the archway is a granite threshold; a large amount of dirt has eroded just west of the threshold causing a major trip hazard. A limestone pier bearing on a granite plinth is attached to the flat archway. The pier is constructed of alternating courses of rounded and flat vertically tooled limestone quoins on the corners and a flat vertically tooled limestone face. (See Photo 223). Spalling has occurred where metal anchors were inserted into the limestone face. A decorative garland wraps horizontally around the top of the pier, surmounted by a limestone cornice and capstone. Approximately 80% of the mortar joints in the limestone

and granite masonry comprising the flat archway and pier are open and exposed.

A four-section, wrought iron fence arcs out from the north pavilion towards Lake Street, divided by five brick and limestone posts. The posts are constructed from alternating courses of Flemish bond brickwork and vertically tooled limestone trim atop a granite curb and brownstone retaining wall. The fence has damaged the brick and limestone posts where it is attached to the masonry. The first post has open and exposed joints at the base of the brickwork. (See Photo 224). The third post has significantly spalling brick at its base. (See Photo 225). Typically, about 30% of the post brickwork is spalling or has open and exposed mortar joints. The last post is larger and more elaborate than the others and capped by a decorative scroll. Limestone trim on this post has been discolored by organic growth and its surface has turned green. Most posts have open and exposed bed joints between the limestone trim and brickwork. The surfaces of the brownstone retaining wall and the granite curb/copingstones display signs of significant spalling as well as open mortar joints. (See Photo 226). There is major spalling and cracking of the brownstone surfaces and granite curbs caused by water migration from the flowerbeds. Rising damp, the adverse effects of freeze-thaw cycles and trees growing out of cracks have also severely affected the wall. Settlement has displaced stone vertically or laterally in the retaining wall opening mortar joints resulting in easier water absorption. Typically about 60% of the mortar joints in the retaining wall are open and exposed or covered with biological growth. The remaining mortar joints display signs of hairline cracking.

The conditions of the south pavilion are similar to those of the north pavilion. One hundred percent of the vertical and horizontal mortar joints in all the limestone and granite trim of the South Pavilion need to

be repointed. (See Photo 227). This includes masonry joints in the granite plinth, limestone base cap, limestone quoins, keystones, fascias, and belt course. The brick and brownstone foundations of the south pavilion are open and exposed. (See Photos 228, 229). The brickwork is in good condition, although varying repointing campaigns are evident and non-matching grey and greybrown mortar has been used. A granite stoop on the west façade leading to the main door is in good condition with some slight spalling. The stoop's corbelled brick foundation is exposed and has open mortar joints. (See Photo 230). A spalling and cracked bluestone curb extends out from the stoop. Soil around the curb and stoop is severely eroded exposing rocks and tree roots. (See Photo 231). The south foundation is constructed from brownstone and displays signs of spalling and organic growth. A limestone tablet inscribed with the donor's name and construction date is set into the north wall.

Extending north from this pavilion is a brick and limestone flat archway. The archway is approximately 5' – 0" wide by 8' – 6" in height and framed by brick and limestone masonry similar to a Gibbs surround. Most of the mortar joints in the archway's limestone trim are open and exposed. The granite threshold for the archway has heaved vertically approximately 6" and has become a major trip hazard. (See Photo 232). A limestone pier bearing on a granite plinth supports the wrought iron gate. The pier is constructed of alternating courses of rounded and flat vertically tooled limestone quoins on the corners and a flat vertically tooled limestone face. A decorative garland wraps horizontally around the top of the pier and is surmounted by a limestone cornice and capstone. Spalling has occurred on the pier in areas where more than one limestone surface is exposed.

A four-section, wrought iron fence arcs out from the south pavilion towards Lake Street, divided by five brick and limestone posts. The

posts are constructed from alternating courses of Flemish bond brickwork and vertically tooled limestone trim atop a granite base and brownstone retaining wall. (See Photo 231). Typically, about 15% of the post brickwork is spalling or has open and exposed joints. Many of the bed joints between the limestone trim and brickwork are open and exposed. The last post is larger and more elaborate than the others and capped by a decorative scroll. Its brick foundation is open and exposed with eroding mortar joints. (See Photo 232). The surfaces of the brownstone retaining wall and granite curb/copingstones display signs of significant spalling as well as open mortar joints. The south retaining wall is approximately 6' – 0" in height. There is major spalling and cracking of the brownstone surfaces caused by water migration from the flowerbeds. Rising damp and the adverse effects of freeze-thaw cycles have also severely affected the wall. Settlement has displaced stone vertically or laterally in the retaining wall, opening mortar joints and resulting in easier water absorption. Typically, about 80% of the mortar joints in the retaining wall are open and exposed or covered with biological growth. (See Photo 233).

IRON GATES AND FENCE

The wrought iron gates and fence are constructed from flat and round iron bars and decorative iron elements including rounded garlands. (See Photos 216, 225, 231, 234). The condition of the wrought iron is good overall. There is minor rusting on the gates and south fence. The fence extending from the north pavilion has exposed rusting iron along the flat iron bars next to the posts. Rust jacking on bolts from this fence is damaging the bricks in posts as well. The paint is cracking and beginning to peel on most of the iron. All wrought iron should be stripped to bare metal and repainted.

WOOD ROOF STRUCTURE

Rafters 4" x 8", 18" on center, slope up from the limestone cornice. (See Photo 235). All rafters extend 4' – 0" beyond the face of the pavilions and terminate as decorative eave supports. All beaded wood board sheathing on each pavilion is cracked or rotted and needs to be replaced in kind. (See Photo 236). The rafters are in better condition, though paint is beginning to peel off approximately 70% of their surfaces. Severe deterioration is visible in about 20% of the wood rafters, including checks and notches. The topside of each rafter may be deteriorated based on the poor condition of the eaves and gutters.

WOOD DOORS AND WINDOWS

Non-original painted plywood doors serve as the entrances to both pavilions. (See Photo 237). Both plywood doors need to be replaced with suitable historic reproductions based on archival research. The original doorframes are in fair condition; the sealant between the frames and masonry has completely failed and needs to be replaced. Non-original painted plywood covers the windows on the primary façade of both pavilions. The wood window sash are in fair condition; however, the perimeter sealant has failed or spaces are filled with hard mortar. All wood elements from the windows and doors that are not replaced need to be stripped down to bare wood and repainted. Small dormer windows are set into the roof at the east and west slopes of each pavilion. All are missing their wooden sashes and glazing.

ASPHALT SHINGLE ROOF

Non-original, asphalt shingles now cover the roof sheathing. There is one copper vent pipe penetration on each roof. The shingles are in

good condition except at the edges and corners of the roof where they are cracked and chipped. All shingles on the “kick” of the roof will need to be replaced for work to be completed on rafters and eaves.

COPPER GUTTERS AND DOWNSPOUTS

All four sides of each pavilion have copper gutters and missing downspouts at the roof perimeter. (See Photo 238). These are in poor condition with visible holes and need to be completely replaced. The downspouts are missing on both pavilions causing severe site erosion, (See Photos 221, 229, 230), and were originally attached by downspout boots to a subsurface drainage system. In many places, the copper gutters have corroded visibly, allowing water to damage the wooden eaves and rafters. (See Photo 239).

WORK PLAN

1. URGENT AND IMMEDIATE

Eliminate trip hazards with the following work:

- 1.1 Remove and reset granite threshold in flat archway adjacent to the south pavilion.
- 1.2 Re-grade site around granite threshold in flat archway adjacent to the north pavilion.

2. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.

- 1.2 Perform all work consistent with the “Guidelines for Restoration” of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing as needed for all removals and as required for all work.
- 1.4 Selectively remove for reinstallation in accordance with SHPO approved plans:
 - 1.4.1 Brick masonry as required for brick repairs.
 - 1.4.2 Iron gates and fence as required for site repairs.
- 1.5 Selectively remove for replacement by new materials:
 - 1.5.1 Copper gutters and downspouts as required for roofing repairs.
 - 1.5.2 Beaded wood board sheathing as required for roofing repairs.
 - 1.5.3 Asphalt shingles as required for roofing repairs.

DIVISION 2: SITE WORK – WITHIN 10’ OF BUILDING FACE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees growing out of north brownstone retaining wall.
- 2.3 Remove trees and large plants within 5’ – 0” of pavilions, archways, piers, retaining walls, fences, bollards, gates, sidewalks and curbs based on consultation with landscape architect.
- 2.4 Recreate historical site paving, based on detailed research of historical documents and analysis of current site paving. Work to include the removal of all roots from paving area and provisions of appropriate base materials. Plans to be approved by SHPO.

- 2.5 Provide site planting, based on historic planting plans including additional soil to restore the grade to historic levels and stabilize and prevent current and future site erosion.
- 2.6 Provide subsurface drainage system, working in conjunction with gutters, downspouts and downspout boots.

DIVISION 4: MASONRY

4.1 Brick

- 4.1.1 Replace all missing and severely damaged brick in pavilions, posts and foundations with new brick to match existing historic brick in size, color and texture.
- 4.1.2 Patch selected areas of damaged historic brick with restoration mortar to match existing historic brick in color and texture.
- 4.1.3 Rake and repoint selected brick mortar joints with mortar to match original based on scientific sampling.
- 4.1.4 Clean selected brick masonry and mortar joints, including removing all plant growth, moss and lichen as well as all graffiti.
- 4.1.5 Provide biocide to remove and limit future organic growth.

4.2 Stone

- 4.2.1 Rebuild selected laterally displaced and settled brownstone.
- 4.2.2 Patch selected damaged historic limestone, brownstone and granite with restoration mortar to match existing historic in color and texture.
- 4.2.3 Rake and repoint all historic limestone, brownstone and granite mortar joints with mortar to match original based on scientific sampling.
- 4.2.4 Rake and repoint selected historic brick joints.

- 4.2.5 Provide metal screens in pedimented vents to prevent insect and animal infestation of the pavilions.

- 4.2.6 Clean all limestone, brownstone and granite masonry including removal of all graffiti and biological growth including moss, lichen and plants.

- 4.2.7 Provide biocide to remove and limit future organic growth.

DIVISION 5: METALS

- 5.1 Remove rust from corroded sections of wrought iron fence.

DIVISION 6: CARPENTRY

- 6.1 Repair roof rafters. Provide epoxy repairs and "Dutchman" if necessary.
- 6.2 Repair or replace in-kind, historic beaded wood board sheathing that has rotted and cracked.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Remove and replace asphalt shingles at roof kick as part of sheathing and eave repair.
- 7.2 Replace damaged gutters, missing downspouts and downspout boots to match originals based on historic documentation.
- 7.3 Remove mortar and deteriorated sealant from around all wood door and window perimeters.
- 7.4 Provide flexible sealant around wood door and window frames at the intersection with masonry.

DIVISION 8: WINDOWS AND DOORS

- 8.1 Replace non-original doors with historically accurate reproductions of original doors based of research of historic documents and period prototypes.

- 8.2 Repair or replace existing damaged wood window sash, repair wood window frame with epoxy and "Dutchman", provide impact resistant glazing.

DIVISION 9: FINISHES

- 9.1 Provide paint on all exposed wood features to match original based on historic paint sampling.
- 9.2 Prepare and paint the wrought iron fence and gate.



Historic Image 6
A color postcard of the Ballantine Gate after its construction. (Date unknown)



Photo 213
View of the gate from Ballantine Parkway.



Photo 214
View of the north pavilion; note the elaborate limestone post as well as the brick and limestone pedestrian entrance to the park.



Photo 215
View of the south pavilion; note the steeply sloped hip roof and the small dormer windows.



Photo 216
A leaf of the wrought iron gateway; note the iron finials/spear tips atop the gate.



Photo 217
The southwest corner of the north pavilion; note the open and exposed joints of the brick foundation.



Photo 218
The pedimented limestone vent on the south wall of the north pavilion;
note the spalling of the stone.



Photo 219
Granite plinth resting on the brick foundation; note the open vertical
and bed joints of the granite and limestone.



Photo 220
The granite stoop on the west façade of the north pavilion; note the missing brick and the deeply eroded joints.



Photo 221
The soil has eroded considerably around the site exposing the foundation.



Photo 222
Severe spalling and cracking of the limestone and granite base on the north pavilion.



Photo 223
The pedestrian entrance and limestone pier of the north pavilion.



Photo 224
Open and exposed mortar joints at the base of a post; note that there are open vertical joints at the granite base.



Photo 225
Spalled and cracked brick at the base of a post; note the poor condition of the bed joints between the limestone and brick.



Photo 226
The brownstone retaining wall extending from the north pavilion; note that trees are growing out of cracks in the wall.



Photo 227
The southwest corner of the south pavilion; note the open and exposed vertical and bed joints.



Photo 228
Corbelled brick foundation supporting the stoop; note the erosion around the site.



Photo 229
The stoop and doorway of the south pavilion; note the curb extending out from the stoop on the right side of the photo.



Photo 230
The displaced granite threshold; note the worn-out paving around the site.



Photo 231
The fence, bollards and landscaping next to the south pavilion.



Photo 232
The post at the end of the south fence; note the eroded foundation.



Photo 233
The brownstone retaining wall of the south pavilion; note the moss and graffiti covering the mortar joints and brownstone.



Photo 234
The wrought iron gate in the flat archway adjacent to the north pavilion; note the erosion next to the granite threshold.



Photo 235
Carved ends of the wooden rafters and the beaded wood board sheathing; note the chipping and cracking of the paint on the rafters as well as the rotted wood sheathing. Also note the condition of the copper gutters and missing downspout.



Photo 236
Severely rotted beaded wood board sheathing on the north pavilion.



Photo 237
The west façade of the north pavilion; note the original door has been replaced with a sheet of plywood.



Photo 238
Copper gutters on the edges of each pavilion; note the poor condition of the eaves.



Photo 239
Completely corroded gutter on the north pavilion.

26. CROSSOVER BRIDGE

INTRODUCTION

The Crossover Bridge, (see Photo 240), was designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from local brownstone.

The Crossover Bridge is a rustic, brownstone footbridge. This bridge is one of three rustic, brownstone footbridges over Branch Brook; one is arched and the other two have lintel spans. Two large rectangular brownstone blocks function as copingstones on each cheek wall. Below them, the walls are constructed from smaller blocks of brownstone. The approximate height of the north and south cheek walls is 24" – 28" at the highest point above the surrounding grade. Each cheek wall is approximately 13' – 9" in length and 26" in width. (See Photo 241). The overall width of the bridge including the cheek walls is approximately 18' – 0". Most of the bridge's brownstone blocks and masonry joints are covered with and discolored by organic growth and graffiti. Currently, foot and bicycle traffic cross the bridge on an unpaved dirt path, 13' – 9" wide, in fair condition. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Crossover Bridge.

DESCRIPTION/CONDITIONS

SITE

The footbridge crosses over the northern part of Branch Brook directly south of the Meadow Pool. (See Photo 242). The direction of the gravel and dirt pathway over the bridge is east/west, and the bridge is at a roughly perpendicular axis to the brook. The bridge and site are about level with the surrounding grade. Water runoff has eroded and exposed rock and soil fill material around the path and site. Currently, the bridge's deck and pathway within approximately 10' – 0" is covered with dirt and small, coarse gray gravel. No remnants of the original paving exist; however, preliminary investigations of other park bridges reveal that it may have been brick or stone pavers.

Water on bridge surfaces has migrated through brownstone, mortar joints and the bridge deck, causing mortar erosion, spalling brownstone and concrete, efflorescence and organic growth on the underside of the bridge. There is a significant amount of vegetation and garbage around the site. Tree roots are exposed between the bridge's deck and cheek walls. Trees and large bushes within 5' – 0" of the bridge need to be examined to determine which roots are causing damage to the bridge. Within 10' – 0" of the bridge along both sides of the brook and Meadow Pool, there is a considerable amount of plant growth and garbage including weeds, bottles, cans and plastic bags that need to be removed.

MASONRY AND CONCRETE

The Crossover Bridge is a random ashlar, brownstone masonry structure. Brownstone block, cheek walls and concrete replacement lintels support the bridge's structure. Smaller vertically tooled or tooled and stippled brownstone blocks comprise the first course of masonry at the bridge's deck. (See Photo 243). Each cheek wall is capped by two large copingstones. These brownstone blocks are 7' – 2" in length with rough-cut surfaces and dressed edges on their exterior

faces. The copingstone surfaces that face the bridge's deck were originally vertically tooled but are now eroded and pock-marked. This bridge originally had sandy, cream-colored mortar joints. Over time, the bridge has been completely repointed with mortars of varying colors and textures. This repointing appears to have changed the width of the original mortar joints, widening them with each consecutive repointing. Typically, the masonry joints on this bridge are 1" – 2" wide and in poor condition. The northeast coping stone is pock-marked and much of its original tooling has eroded. (See Photo 244). There is a large crack in the bed joint of the southeast copingstone. (See Photo 245).

Overall the brownstone surfaces on the bridge display signs of spalling, chipping, cracking and delaminating stone. (See Photos 244, 245, 246). The exterior vertical face of the south cheek wall is in poor condition. Forty percent of the mortar is missing or in poor condition, and graffiti covers the surface of the brownstone. (See Photo 247). The exterior vertical face of the north cheek wall is also in poor condition. (See Photo 248). Forty percent of the mortar is missing or in poor condition and graffiti and organic growth cover the surface of the brownstone. The original brownstone lintel spanning the bridge's opening has been replaced with concrete. (See Photo 248). Below the lintel to the right and left, the brownstone has cracked or is completely missing, causing structural damage to the bridge. (See Photo 249). The brownstone walls on the underside of the bridge have been reinforced with concrete. This concrete reinforcing has failed due to the scouring action of the stream. Large pieces of broken brownstone and concrete can be seen in the water underneath the bridge. (See Photo 250).

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the footbridge structure, paying particular attention to the concrete and brownstone box culvert to determine its structural integrity. Expose the concrete arch footings (halting the flow of water, as necessary) to examine their condition. Probe the top of the box culvert, exposing some concealed areas to determine its structural integrity.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing as needed for all removals and as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF FOOTBRIDGE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of footbridge, based on consultation with landscape architect and in accordance with historic planting plan.
- 2.3 Recreate historical site paving, based on detailed research of historical documents and analysis of current paving covering path and bridge deck. Work to include the removal of all roots from paving area and provisions of appropriate base materials. Plans to be approved by SHPO.

- 2.4 Provide site planting, based on historic planting plans, including soil adjustments to restore the grade to historic levels and stabilize the earthen banks adjacent to the cheek walls.

DIVISION 3: CONCRETE

- 3.1 Concrete
- 3.1.1 Repair concrete box culvert, lintel and footings based on detailed inspection of current conditions.
- 3.1.2 Provide water sealants and coatings at topside of box culvert as required, based on probes of box culvert.
- 3.1.3 Examine and inspect the current conditions of the concrete foundation under the bridge. Based on that inspection, make recommendations for repair as required.

DIVISION 4: MASONRY

- 4.1 Stone
- 4.1.1 Replace selected damaged historic brownstone with new brownstone to match existing historic brownstone in size, color and texture.
- 4.1.2 Patch selected damaged historic brownstone with restoration mortar to match existing historic brownstone in color and texture.
- 4.1.3 Rake and repoint all brownstone mortar joints, except at exterior copingstones, with mortar to match

- 2.5 Provide grading and drainage to the site to prevent erosion and manage storm water runoff.
- 2.6 Dispose of all removed earth and dredge materials, legally off-site.

original in color and texture based on scientific sampling.

- 4.1.4 Retool selected brownstone surfaces, restoring them to a facsimile of their original condition based on historic images and documentation.
- 4.1.5 Clean all brownstone masonry and mortar joints, including removing all plant growth, moss and lichen as well as all graffiti.
- 4.1.6 Provide biocide to remove and limit future organic growth.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Provide backer rods and sealant at the tops and side of all copingstones. Sealant to match original mortar color.



Photo 240
View looking west towards the crossover bridge.



Photo 241
View of the north cheek wall; note that the surface is covered with graffiti and organic growth.



Photo 242
Looking over meadow pool towards the crossover bridge; note that this footbridge is smaller than the others.



Photo 243
The courses of brownstone on the north cheek wall; note the different finishes on the stone surfaces as well as the graffiti.



Photo 244
The top course of stone is pock-marked and the vertical tooling has eroded; note the small course of brownstone in the middle.



Photo 245
The cracked bed joint at the base of a copingstone on the south cheek wall.



Photo 246
The copingstones atop the north cheek wall; note the spalling and delaminating stone as well as the graffiti.



Photo 247
Missing and eroded mortar and brownstone at the base of the south cheek wall; note the dressed, beveled edges and rough-cut surfaces on the copingstones. Note also the limited water flow area of the channel opening.



Photo 248
The concrete replacement lintel on the north side of the bridge; organic growth and graffiti; note the limited channel flow area.



Photo 249
Cracked and missing brownstone and mortar on both sides of the bridge.



Photo 250
Displaced and broken pieces of concrete and brownstone under the bridge.

27. WEIR 3

INTRODUCTION

Within the northern division of Branch Brook Park, there are 4 weirs that were built to keep an adequate supply of water in the brook at all times. These were designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from concrete and local fieldstones. According to John Olmsted, each weir was to be constructed from concrete and fieldstone having a gently sloping face so water flowing over the surface formed a ripple or rapid. Although the water course and bridges were built in accordance with the Olmsted plans, the four weirs were built with vertical faces, contrary to the firm's directions. Today, what does exist are 4 weirs with vertical faces.

The weirs are each approximately 14' – 0" in length and 3' – 0" in width. The vertical dam across the brook was constructed with concrete. The sides of each weir were built into the banks of the brook, constructed with concrete and covered with local fieldstone. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments for Weir 3 in the northern division of Branch Brook Park.

DESCRIPTION/CONDITIONS

SITES

Weir 3, (see Photo 251), is directly north of the Brownstone Bench Bridge. This weir also has severe erosion around its embankments and

the brook's elevation is the same on both sides of the concrete wall. The embankments are covered with plant growth.

CONCRETE / MASONRY

Weir 3, similar to the other weirs, is constructed from concrete and fieldstone. The main vertical wall of the weir is constructed from concrete, while each side of the weir that is built into the bank of the brook is constructed from concrete covered with fieldstones. There is a valve and intake drain on the north side of the weir. The intake drain is still working but the valve is broken. Water flows from a pipe on the south side of the weir and also around the fieldstones on the east side. As with Weir 2, many fieldstones that were originally set in the concrete are either loose or missing, and the brook flows around the east side where severe site erosion has occurred.

WORK PLAN

The work plan for all 4 weirs is part of the overall plan for reconstruction of the Branch Brook Park Waterway. This process involves reconstructing all the historic water features to the period of significance (1898-1937) determined elsewhere in the cultural landscape report. Archeological investigation may be required to determine original configurations. Design by a hydraulic engineer will be required. The reconstruction process involves dredging the brook of sediments and regrading the eroded banks of the brook. The following rehabilitation Plan highlights the technical restoration considerations.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Selectively remove for reinstallation in accordance with SHPO approved plans:
 - 1.3.1 Stone masonry as required for masonry repairs.
- 4.4 Rake and repoint all stone mortar joints and provide for through-wall drainage.

DIVISION 2: SITE WORK – WITHIN 10' OF WEIR

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of weir based on consultation with the landscape architect.
- 2.3 Providing site planting based on historic planting plans including additional soil to restore the grade to historic levels and stabilize the earthen banks adjacent to the wing walls and above the river's concrete retaining walls.
- 2.4 Provide grading and drainage to the site to prevent erosion and manage storm water.

DIVISION 3: CONCRETE

- 3.1 Repair all damaged concrete.

DIVISION 4: MASONRY

- 4.1 Replace all severely deteriorated stone with new stone to match existing historic in size, color and texture.
- 4.2 Reset displaced stone.
- 4.3 Provide new stone to match existing historic stone in type, size, color, and texture to replace missing embankment stones.



Photo 251
This weir is directly north of the brownstone bench bridge; note the pipe where water drains from the base of the weir.



Photo 252
The water level is the same on both sides of the weir; the severely eroded embankments and displaced stones no longer hold the water.

28. WEIR 4

INTRODUCTION

Within the northern division of Branch Brook Park there are 4 weirs that were built to keep an adequate supply of water in the brook at all times. These were designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from concrete and local fieldstones. According to John Olmsted each weir was to be constructed from concrete and fieldstone having a gently sloping face so water flowing over the surface formed a ripple or rapid. Although the water course and bridges were built in accordance with the Olmsted plans, the four weirs were built with vertical faces, contrary to the firm's directions. Today, what does exist are 4 weirs with vertical faces.

The weirs are each approximately 14' – 0" in length and 3' – 0" in width. The vertical dam across the brook was constructed with concrete. The sides of each weir were built into the banks of the brook, constructed with concrete and covered with local fieldstone. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments for Weir 4 in the northern division of Branch Brook Park.

DESCRIPTION/CONDITIONS

SITES

Weir 4, (see Photo 253), is directly north of the Meadow Pool and east of the Policeman's memorial. This site is overgrown with weeds,

bushes and small trees and the banks of the brook around the weir have eroded significantly.

CONCRETE / MASONRY

Weir 4, similar to the other weirs, is constructed from concrete and fieldstone. The main vertical wall of the weir is constructed from concrete, while each side of the weir that is built into the bank of the brook is constructed from concrete covered with fieldstones. Weir 4, similar to Weir 3 has a valve and intake drain on its north side of the weir. The intake drain is still working but the valve is broken. Water flows from a pipe on the south side of the weir and there are missing fieldstones each side of the weir. The concrete wall has cracked through between the intake valve and downstream face.

WORK PLAN

The work plan for all 4 weirs is part of the overall plan for reconstruction of the Branch Brook Park Waterway. This process involves reconstructing all the historic water features to the period of significance (1898-1937) determined elsewhere in the cultural landscape report. Archeological investigation may be required to determine original configurations. Design by a hydraulic engineer will be required. The reconstruction process involves dredging the brook of sediments and regrading the eroded banks of the brook. The following rehabilitation Plan highlights the technical restoration considerations.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Selectively remove for reinstallation in accordance with SHPO approved plans:
 - 1.3.1 Stone masonry as required for masonry repairs.

DIVISION 2: SITE WORK – WITHIN 10' OF WEIR

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of weir based on consultation with a landscape architect.
- 2.3 Providing site planting based on historic planting plans including additional soil to restore the grade to historic levels and stabilize the earthen banks adjacent to the wing walls and above the river's concrete retaining walls.
- 2.4 Provide grading and drainage to the site to prevent erosion and manage storm water.

DIVISION 3: CONCRETE

- 3.1 Repair or replace all damaged concrete.

DIVISION 4: MASONRY

- 4.1 Replace all severely deteriorated stone with new stone to match existing historic in size, color and texture.
- 4.2 Reset displaced stone.
- 4.3 Provide new stone to match existing historic stone in type, size, color and texture to replace missing embankment stones.
- 4.4 Rake and repoint all stone mortar joints and provide for through-wall drainage.



Photo 253
The fourth weir is constructed from concrete and also has a pipe that serves as a drain at its base.



Photo 254
Weir 4 looking west at the back of the Police Memorial.

29. POLICEMEN'S MEMORIAL

INTRODUCTION

The Policemen's Memorial was erected in memory of Police Officer Dewey J. Sherpo III in 1997, "who sacrificed his life serving his community." It is located in the northern division of Branch Brook Park immediately west of Weir 4 and east of the Park Drive. The granite memorial consisting of a finished headstone and fieldstone boulder is in excellent condition. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions including conditions assessments. No work plan is provided due to the excellent condition of the Memorial itself; however, the base design and plantings are not appropriate in an historic park.

DESCRIPTION/CONDITIONS

SITE

The modest memorial stones are set within an oval constructed from modular cast stone retaining blocks. The oval is filled with earth and contains a granite headstone and fieldstone boulder with a bronze memorial plaque. The memorial sits within a small, grassy area immediately west of the Branch Brook and Weir 4.

MASONRY

The stone memorial features are in excellent condition. There is no damage or graffiti to either the granite tombstone or fieldstone boulder. They are well maintained.



Photo 255
Policemen's Memorial, erected in memory of Police Office Dewey J. Sherpo III, located between the Park Drive and Weir 4 on the Branch Brook.



Photo 256
The granite memorial headstone for Police Officer Dewey J. Sherpo, III.



Photo 257
The fieldstone boulder with a bronze plaque for Dewey J. Sherpo, III.

30. BROOKSIDE MEADOW BRIDGE

INTRODUCTION

The Brookside Meadow Bridge, (see Photo 258), was designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from local fieldstones gathered by workers building the park.

The Brookside Meadow Bridge is a rustic fieldstone bridge. This is one of four rustic arched footbridges over Branch Brook; three are constructed from fieldstones and boulders and one from rough-cut and tooled brownstone. Fieldstones from approximately 1' – 0" to 3' – 0" in diameter serve as copingstones atop the cheek walls and are laid in a rustic pattern comprising the vertical face of these walls. (See Photos 259, 260). The height of the cheek wall above the bridge's deck is about 3' – 0". Both cheek walls are approximately 2' – 0" wide and the overall width of the bridge is approximately 14' – 6". Over time the cheek walls above the bridge's deck have been repointed with mortars of different colors and textures. Large granite lintels span an opening leading to a concrete box culvert underneath the bridge. (See Photos 260, 261). Currently foot and bicycle traffic travel over the bridge on a dirt and gravel path 10' – 6" wide. Many of the boulders are covered with graffiti or organic growth, including moss, lichen and plants. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Brookside Meadow Bridge.

DESCRIPTION/CONDITIONS

SITE

This Brookside Meadow Bridge crosses Branch Brook in the park's northern division between the Brownstone Lintel Bridge and the Crossover Bridge. A dirt and gravel pathway crosses north/south over the bridge at a perpendicular axis to the brook. The bridge and site are slightly elevated above the surrounding grade. Examinations of the site reveal that the original bridge deck paving is gone and that the site grading has eroded significantly over time, exposing the original rock and soil fill material. This rock and dirt fill has compacted and is now the new bridge deck surface. (See Photo 258). No remnants of the original paving exist, however preliminary investigations of other park bridges reveal that it may have been brick or stone pavers. Significant amounts of vegetation, including bushes, weeds and moss, are growing around the site, specifically, on or around the east cheek wall.

The bridge's deck is extremely rough and uneven with large exposed stones, tree roots and plant growth on its surface. These uneven and eroded surfaces result in poor drainage further eroding dirt and exposing more roots and rock fill. Water runoff from the bridge has eroded a substantial amount of dirt and mortar joints at the bases of all the cheek walls making the joints susceptible to water penetration and the adverse effects of freeze-thaw cycles. There is a significant amount of vegetation and garbage around the site, including bushes growing from cracks in masonry on the east cheek wall. (See Photos 260, 261). Trees and large bushes within 5' – 0" of the bridge need to be examined to determine which roots are causing damage to the bridge. Within 10' – 0" of the bridge along both sides of the brook there is a considerable amount of plant growth and garbage including weeds, bottles, cans and plastic bags that need to be removed.

MASONRY AND CONCRETE

The Brookside Meadow Bridge is a fieldstone, lintel masonry bridge constructed in a rustic design. A large horizontal granite lintel, approximately 6' – 0" in length, spans the opening on each side of the bridge leading to the concrete box culvert underneath the bridge. (See Photos 260, 261). The bottom of the lintel and surfaces of the box culvert are covered with organic growth and efflorescence caused by water penetrating from above. The stream has also significantly eroded or washed away completely, mortar at the base of the west cheek wall. (See Photo 262). Sections of the culvert have been patched with concrete and fieldstone. (See Photo 263). Large sections of material at the base of the concrete culvert have been completely eroded by the scouring action of the stream. (See Photo 264). The east cheek wall has two bushes growing from cracks in its mortar joints, many of which are deeply eroded.

The bridge's original mortar may have more closely resembled the color and texture of the fieldstone. Over time the bridge has been completely repointed with mortars of varying colors and textures; several campaigns are apparent. This repointing appears to have changed the width of the original mortar joints, widening them with each consecutive repointing. Currently, the width of each mortar joint varies from 1"-4". Some remedial patching of the mortar joints has been completed carelessly. (See Photo 265). Fieldstones are missing from the south end of the west cheek wall. (See Photo 266). Approximately 40% of the mortar on the east and west cheek walls facing the bridge's deck is cracked. This includes hairline cracks around copingstones and more significant cracking at the base of each wall. Rising damp, adverse effects of freeze-thaw cycles and the scouring action of the brook has cracked and spalled mortar and fieldstone within 12" of the bridge's entire base. The fieldstone

masonry and mortar is covered with organic growth including two bushes, moss and lichen. (See Photo 267).

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the footbridge structure, paying particular attention to the concrete box culvert to determine its structural integrity. Probe the top of the culvert, exposing some concealed areas to determine its structural integrity.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing, as needed, for all removals and as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF FOOTBRIDGE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of footbridge based on consultation with landscape architect and in accordance with historic planting plan.
- 2.3 Recreate historical site paving, based on detailed research of historical documents and analysis of current paving covering path and bridge deck. Work to include the removal of all

- roots from paving area and provisions of appropriate base materials. Plans to be approved by SHPO.
- 2.4 Provide site planting, based on historic planting plans, including soil adjustments to restore the grade to historic levels and stabilize the earthen banks adjacent to the cheek walls.
 - 2.5 Provide grading and drainage to the site to prevent erosion and manage storm water runoff.
 - 2.6 Dredge the brook to allow for the free movement of water and to prevent additional damage to the west cheek wall.
 - 2.7 Legally dispose of all removed earth and dredge materials off-site.

DIVISION 3: CONCRETE

- 3.1 Concrete
 - 3.1.1 Repair concrete box culvert and footings based on detailed inspection of current conditions.
 - 3.1.2 Provide water sealants and coatings at top side of culvert as required, based on probes of culvert.
 - 3.1.3 Examine and inspect the current conditions of the concrete foundation under the bridge. Based on that inspection, make recommendations for repair as required.

DIVISION 4: MASONRY

- 4.1 Stone
 - 4.1.1 Reset missing fieldstones on south end of west cheek wall.
 - 4.1.2 Remove two bushes from east cheek wall, minimizing damage to fieldstone and mortar masonry.

- 4.1.3 Patch selected damaged historic fieldstone with restoration mortar to match existing historic fieldstone in color and texture.
- 4.1.4 Rake and repoint selected fieldstone mortar joints with mortar to match original in size, color and texture based on scientific sampling and historic resources; and soft mortars to minimize hairline cracking.
- 4.1.5 Clean all fieldstone masonry and mortar joints including removing all plant growth, moss and lichen as well as all graffiti.
- 4.1.6 Provide biocide to remove and limit future organic growth.



Photo 258
The Brookside Meadow Bridge; note overgrown vegetation around the site and the eroded dirt and gravel pathway.



Photo 259
The bottom course of stonework on the bridge capped by large fieldstones; note the wide mortar joints and the moss on the wall.



Photo 260
A large granite lintel spanning the culvert opening on the bridge's west side; note the change in the water level from the photo below.



Photo 261
The rustic stonework on the west side of the bridge; note the bushes and trees overgrowing the bridge and site.



Photo 262
The mortar between these fieldstones on the base of the west cheek wall has eroded significantly or washed away completely.



Photo 263
The box culvert under the bridge; note that some remedial patching with concrete and fieldstones is apparent.



Photo 264
Significant spalling in the concrete box culvert underneath the bridge;
note the efflorescence and organic growth.



Photo 265
Mortar has been slathered on top of the west fieldstone cheek wall.



Photo 266
Fieldstones missing from the south side of the west cheek wall.



Photo 267
Bushes and plants growing from cracks on the south side of the east cheek wall; note the deeply eroded mortar joints.

31. BROWNSTONE LINTEL BRIDGE

INTRODUCTION

The Brownstone Lintel Bridge, (see Photo 268), was designed by the landscape architectural firm of Olmsted Brothers (Brookline, Massachusetts) and constructed around 1900 from local brownstone.

The Brownstone Lintel Bridge is a rustic, brownstone lintel footbridge that rests on a concrete foundation. Large rough-cut brownstone blocks comprise the bridge's structure. This bridge is one of three rustic brownstone footbridges over Branch Brook; one is arched and the other two have lintel spans. The north and south cheek walls are approximately 3' – 4" at their highest point above the surrounding grade. Each cheek wall is approximately 2' – 0" in width and constructed from courses of rough-cut, brownstone masonry block. The overall width of the bridge including the railings is approximately 14' – 6". Currently, foot and bicycle traffic travel over the bridge on a paved asphalt and dirt/gravel path that is approximately 10' – 6" wide and in poor condition. The brownstone blocks and masonry joints are covered with organic growth including moss and lichen. (See Photo 269). Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Brownstone Lintel Bridge.

DESCRIPTION/CONDITIONS

SITE

The footbridge crosses over the northern part of Branch Brook directly south of the Upper Pool. The bridge and site are about level with the surrounding grade. Examinations of the site reveal that the path within about 10' – 0" of the bridge as well as the original site grading has eroded significantly. This has exposed rock and soil fill material around the path and site. Currently, the deck of the bridge is covered with asphalt paving up to the base of each cheek wall. No remnants of the original paving exist; however, preliminary investigations of other park bridges reveal that it may have been brick or stone pavers. Three large brownstone blocks stand vertically at both ends of each cheek wall. On the north side of the bridge two of these blocks are displaced horizontally approximately 1"-3" and contain significant spalling and eroded mortar joints. Water runoff from the bridge and its deck along with rising damp and the adverse effects of freeze-thaw cycles has exacerbated the situation. Water on bridge surfaces has migrated through brownstone, mortar joints and the bridge deck, causing mortar erosion, spalling brownstone, efflorescence and organic growth on the underside of the bridge. There is a significant amount of vegetation and garbage around the site. Large weeds are growing from cracks between the bridge's deck and cheek walls. Trees and large bushes within 5' – 0" of the bridge need to be examined to determine which roots are causing damage to the bridge. Within 10' – 0" of the bridge along both sides of the brook, there is a considerable amount of plant growth and garbage including weeds, bottles, cans and plastic bags that need to be removed.

MASONRY

The Brownstone Lintel Bridge is a coursed ashlar, brownstone masonry structure. Large, rough-cut, brownstone block cheek walls and massive brownstone lintels support the bridge's structure. This bridge originally had sandy, cream-colored mortar joints. Over time, the bridge has

been completely repointed with mortars of varying colors and textures. The two bottom brownstone courses that face the pathway have rough-cut surfaces, (See Photo 270), while the top course of masonry has a tooled, stippled finish that displays signs of excessive wear and weathering and is covered with graffiti. (See Photo 271). The tooled surface of the top brownstone course has eroded significantly and also displays signs of scaling and spalling. Plants are growing from the cracks between the bases of both cheek walls and the asphalt bridge deck. The mortar joints on these three courses of masonry are in poor condition and need to be completely repointed.

On the north side of the bridge three brownstone blocks are set vertically at the end of each cheek wall. Two of these blocks are displaced and all display signs of severe spalling, (see Photo 272), delaminating stone or eroded mortar joints. (See Photo 273). The mortar joints of the middle vertical block on the northeast side of the bridge have completely eroded causing horizontal displacement of about 3". This evidences erosion through water penetration, rising damp and the adverse effects of freeze-thaw cycles or severe mortar shrinkage. (See Photo 274). The end block on the northwest side of the bridge has severe delaminating brownstone along the bedding plane, a 6" section appears to have been replaced. A large brownstone lintel, approximately 8' – 0" long, spans the openings on each side of the bridge. The brownstone walls on the underside of the bridge have been reinforced with concrete. About 3"-4" of material at the base of the concrete box culvert has been completely eroded by scouring action of the stream. (See Photo 275). Both cheek walls of the bridge are finished with rough-cut, ashlar masonry displaying signs of spalling, scaling and cracking. (See Photo 276). All mortar joints on both these walls are eroded, cracked and covered with organic growth, and all need repointing. Both cheek walls are covered with organic growth and graffiti.

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the footbridge structure, paying particular attention to the concrete and brownstone box culvert to determine its structural integrity. Expose the concrete arch footings (halting the flow of water as necessary) to examine their condition. Probe the top of the arch, exposing some concealed areas to determine its structural integrity.

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing, as needed, for all removals and as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF FOOTBRIDGE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of footbridge based on consultation with landscape architect and in accordance with historic planting plan.
- 2.3 Recreate historical site paving, based on detailed research of historical documents and analysis of current paving covering path and bridge deck. Work to include the removal of all

- roots from paving area and provisions of appropriate base materials. Plans to be approved by SHPO.
- 2.4 Provide site planting, based on historic planting plans, including soil adjustments to restore the grade to historic levels and stabilize the earthen banks adjacent to the cheek walls.
 - 2.5 Provide grading and drainage to the site to prevent erosion and manage storm water runoff.
 - 2.6 Dredge brook to allow for the free movement of water.
 - 2.7 Dispose of all removed earth and dredge materials, legally off-site.

DIVISION 3: CONCRETE

- 3.1 Concrete
 - 3.1.1 Repair concrete box culvert and footings based on detailed inspection of current conditions.
 - 3.1.2 Provide water sealants and coatings at topside of box culvert, as required, based on probes of culvert.
 - 3.1.3 Examine and inspect the current conditions of the concrete foundation under the bridge. Based on that inspection, make recommendations for repair as required.

DIVISION 4: MASONRY

- 4.1 Stone
 - 4.1.1 Patch selected damaged historic brownstone with restoration mortar to match existing historic brownstone in color and texture.
 - 4.1.2 Rake and repoint all brownstone mortar joints, except at exterior copingstones with mortar to match original in size, color and texture based on scientific sampling and historic resources.

- 4.1.3 Retool selected brownstone surfaces restoring them to a facsimile of their original condition based on historic images and documentation.
- 4.1.4 Clean all brownstone masonry and mortar joints, including removing all plant growth, moss and lichen as well as all graffiti.
- 4.1.5 Provide biocide to remove and limit future organic growth.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Provide backer rods and sealant at the tops and side of all copingstones. Sealant to match original mortar color.



Photo 268
View southeast towards the brownstone lintel bridge; note the poor condition of the path.



Photo 269
Organic growth and graffiti on the vertical face of the east cheek wall; note the large lintel stone on the bottom of the photo.



Photo 270
Three courses of stonework on the west cheek wall; note the graffiti on the top blocks and vegetation along the base.



Photo 271
A detail of the brownstone atop the west cheek wall; note that the well-tooled stone surface is spalling and graffiti-covered.



Photo 272
An area of circular spalling on the middle block; note that the top fifth of the block on the right has been reattached or replaced with new brownstone.



Photo 273
An end block of the west cheek wall; note that the top of this stone has delaminated and the joints have been repointed.



Photo 274
Eroded masonry joints on the east side of the bridge; note that the middle block is displaced and mortar has eroded from its joints.



Photo 275
Concrete reinforcing on the bridge's underside; note that the reinforcing has eroded significantly.



Photo 276
The coursed-ashlar and rough-cut brownstone, east cheek wall; note the green organic growth and spalling stone surface.



Photo 277
The west cheek wall; note the plant growth at its base and asphalt paving only on the bridge deck.

32. MAINTENANCE FACILITY FOR ESSEX COUNTY PARK

INTRODUCTION

The Maintenance Facility for Essex County Parks is a multi-building facility located at the western border of Branch Brook Park, immediately south of Heller Parkway, and is accessed from the southbound Park Drive. This is the original site of the maintenance facility. "Green houses and sheds were erected...in 1899 establishing this area... as a maintenance and utility area." It has 5 major buildings, a storage building to the south, 2 small garages to the north and northeast, a greenhouse complex and the large central, maintenance garage and office.

Except for the greenhouses, the structures all have concrete block exterior walls. They are in fair condition and all evidence normal wear of an active maintenance facility. Some features are in poor condition and in need of repair. The site is fenced and visible from the Park, but it is not accessible to the public.

Copies of the construction drawings for the Maintenance Garage are located at the Essex County Department of Parks, Recreation and Cultural Affairs (Newark, NJ). Annotated photographs for the Maintenance Facility site provide visual images with detailed condition descriptions. The following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work.

DESCRIPTIONS/CONDITIONS

SITES

The Maintenance Facility site is situated to the southwest of the intersection of the southbound Park Drive and Heller Parkway. It is surrounded by a minimum 6' high chain link fence topped by barbed wire. At the north and northeast, the site slopes up to the roads and is treed. The land to the south rises and is also covered with trees. (See Photo 279). The Newark Subway right-of-way is the boundary on the west. There is a concrete curb along the Park Drive frontage.

One 10' section of concrete curb along the Park Drive is broken. The chain link fence is strictly utilitarian, providing no screening. The site is filled with construction materials and equipment. The site is visually incompatible with the rustic landscaped surroundings. (See Photo 278).

STORAGE BUILDING

Located at the south of the site, the Storage Building is a simple, rectangular, gable-roof structure. (See Photo 278). It has painted CMU walls, asphalt shingle roof with overhanging wood eaves and a limited number of door openings. The building is in good condition with no discernable signs of deterioration other than normal wear.

GREENHOUSES

The current greenhouse complex was constructed in 1991 replacing earlier facilities. Two rectangular, gable-roof greenhouses, with "plastic" glazing on their sides, and roofs are entered through a split-faced, CMU shed-roof entry structure. (See Photo 280). All windows and doors are made of aluminum. The entry building has 3 double-door entries and 5 skylights in the shed-roof. The limited amount of gutter is in poor condition with 1 section missing and 1 section filled

with plant growth. Downspouts are missing. The CMU is cracked on the north side and soiled in some locations. Some glazing is broken. The greenhouses were not being used in late 2004 and early 2005, but there are plans to resume greenhouse operations in Spring 2005 to grow plants for use in various Essex County parks.

MAINTENANCE GARAGE

The Maintenance Garage is the largest structure in the complex. It was designed by Newark architects Eppel and Seaman in 1961. (See Photo 282). It houses the maintenance offices as well as the maintenance facilities and garage. It is a strictly utilitarian structure with a number of additions. Its walls are painted CMU with a steel structure supporting the roof. Heights of the building sections vary; the lowest is about 14' high. There are continuous "clerestory" windows along the north and east. There are numerous openings, including large, vehicular openings as well as smaller doorways. The doors are made of both wood and steel. The roofs are low-slope and are not visible from the ground. There is a simple painted wood fascia. Some of the glazing is broken, but the facility is in good condition.

LARGE GARAGE

The Large Garage is located immediately to the north of the site entry. (See Photo 283). It is a rectangular building with a modestly-sloped roof from front to rear. It was probably constructed in 1961/1962 since the 1961 plans for the Maintenance Garage show 3 smaller structures in this same location which were "to be removed". There are 7 large wood garage doors and 1 centrally-located pedestrian door; all are wood and similar to the maintenance building. There is a simple painted wood fascia on the walls at the roof perimeter. Some of the fascia is rotted.

SMALL GARAGE

The Small Garage is the most northerly of the maintenance facility structures. It is newer than the Large Garage and has 5 taller vehicle bays with wood-paneled garage doors. (See Photo 284). The walls are painted CMU with a painted fascia. Like the Large Garage, the low-slope roof pitches from the front to the rear.

WORK PLAN

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from NJ State Historic Preservation Office (SHPO).

DIVISION 2: SITE WORK – WITHIN 10' OF BASE

- 2.1 Remove damage concrete curb and provide new concrete curb south of facility entrance.
- 2.2 Remove site chain link fence along Park Drive and provide new historically appropriate fence to screen stored maintenance materials and equipment.

DIVISION 4: MASONRY

- 4.1 Repair damaged CMU

DIVISION 5: CARPENTRY

- 5.1 Repair damaged and rotted wood fascia.

DIVISION 7: THERMAL & MOISTURE PROTECTION

- 7.1 Replace missing gutters and downspouts.

7.2 Clean out missing downspouts.

DIVISION 8: DOORS, WINDOWS, and GLAZING

8.1 Replace all broken glazing.



Photo 278
View of the Maintenance Facility site showing chain link fence along Park Drive and the badly damaged concrete curb; note the extensive array of material and equipment visible from the Park.



Photo 279
View of the Maintenance Facility, with the Storage Building beyond; note the southern site fence rising into the trees.



Photo 280
View of the 1991 Greenhouse entry section with steeply sloped shed roof; 2 plastic, glazed greenhouses run perpendicular from the entry building.



Photo 281
View of the southern gable ends of the greenhouses; note that the aluminum mullions and plastic glazing are generally low-maintenance.



Photo 282
View of east wall of the main Maintenance Garage; note that the continuous "clerestory" window provides significant natural light.



Photo 283
View of the 7-bay Large Garage with wood-paneled doors; note that the maintenance site entry is to the right (south).



Photo 284 View of Small Garage.

33. ALTHEA GIBSON TENNIS CENTER

INTRODUCTION

In February 1927, the Branch Brook Parks Commission approved plans for the construction of 20 tennis courts. Rubien Construction Co. of New York City was awarded the contract. Arthur Dillon, Architect designed the first tennis building around 1929, which was called the tennis pavilion. In 1982, Brown & Hale Architects, (Newark, N.J.) designed the current building. (See Photo 285). This firm was also responsible for designing and restoring many structures in the park's Southern Division during that time.

The building's walls are concrete block masonry covered with cement plaster. Six square brick columns frame five arched openings on the front of the building. They support an asphalt-shingled, sloped roof over and brick and concrete porch. There is one small fixed window, a thru-wall air conditioning unit and a garage door on the building's south façade. (See Photo 286). The east façade, or rear of the building, is covered with cement plaster. A section of the sloped roof comes within approximately 6' – 0" of the ground. This area of the roof has been fenced off to prevent injury/vandalism. (See Photo 287). The north side of the building has two metal vents and two screened windows that pierce the wall. The base of the north wall has an area of cracked plaster and peeling paint caused by missing gutters and downspouts. (See Photo 285). A small retaining wall on the south side of the building is covered with peeling paint and staining caused by water infiltration from the surrounding dirt. (See Photo 288). Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions,

including conditions assessments, and a work plan for proposed remedial work of the Althea Gibson Tennis Center.

DESCRIPTION/CONDITIONS

SITE

The Tennis Center is located in the park's extension directly west of the tennis courts and Branch Brook Park Drive. Flower beds and a grass lawn are directly south of the building. A grass lawn planted with trees is east of the building. Gravel and asphalt covered paths lead to other areas of the park from the front of the building. In this area the ground slopes down towards the courts and includes terraced landscaping and benches. (See Photo 289).

CONCRETE/MASONRY

The tennis center is constructed from concrete masonry units covered with cement plaster. Typically, the concrete block walls and cement plaster are in good condition with some cracked and peeling plaster and paint along the base of the building and porch. (See Photo 289). Organic growth covers some wall areas, especially along the base. The control joints in each wall are in good condition. The concrete retaining wall at the south side of the building displays signs of water staining and severely peeling paint. (See Photo 290). The concrete paving on the floor of the porch is in good condition.

BRICK MASONRY

The six square brick columns on the front of the building are in good condition with slight spalling and cracking on the corners. All the columns are covered with a thick coat of brown glossy paint. The brick masonry around the porch's perimeter and ramp leading to the

porch is in fair condition. (See Photo 291). This brick masonry has open and exposed mortar joints and in some areas severe damage caused by contact with traffic. (See Photo 292). Sections of this brick masonry have also been coated with a thick covering of brown paint.

WOOD CORNICE

A wood cornice surrounds the top of the building. The cornice is in good condition but there are some areas of peeling paint and cracked wood.

GUTTERS AND DOWNSPOUTS

The aluminum gutters and downspouts on the building are in poor condition. Many are broken or missing, allowing water to damage the building. (See Photos 290, 292). Three downspouts are missing on the front of the building, (see Photo 293), and a gutter is on the ground on the north side of the building.

ASPHALT SHINGLE ROOF

The roof is in good condition overall with no signs of cracked or missing shingles.

DOORS AND WINDOWS

A wood door serves as the main entrance to the building and is in good condition. There is one fixed window and a garage door on the south side of the building. Both display signs of normal wear and weathering. There are two windows on the north side of the building covered with a heavy steel screen. There is one window/opening on the primary façade of the building covered with a rolling steel security gate.

WORK PLAN

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the US Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).

DIVISION 2: SITE WORK – WITHIN 10' OF THE BUILDING

- 2.1 Remove and legally dispose of all debris from site, including leftover concrete.
- 2.2 Remove octagonal planter and flowers and provide new landscape plantings to complement the historic character of the park.

DIVISION 4: MASONRY

- 4.1 Clean concrete masonry including the removal of all organic growth and graffiti.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Replace missing gutters and downspouts; repair existing as required.

DIVISION 9: FINISHES

- 9.1 Where necessary, provide new cement plaster over concrete blocks to match current conditions.
- 9.2 Prepare and paint cement plaster walls to match current paint colors.



Photo 285
Overall view of the tennis center; note the arched porch.



Photo 286
The small fixed window above the in-wall air conditioning unit; note the raised flower bed south of the building.



Photo 287
The sloped roof on the east side of the building; note that a fence has been placed there to prevent injury/vandalism.



Photo 288
The concrete retaining wall has been damaged by water penetrating from the surrounding grade and freeze-thaw cycles; note the cracked and peeling paint.



Photo 289
View of the tennis center from the north; note the areas of landscaping.



Photo 290
The base of the north wall showing cracked and peeling paint caused by water damage from a missing downspout; note the leftover concrete on the ground.



Photo 291
A square brick column and brick trim on the porch; note that the brick is covered with a heavy coat of brown paint.



Photo 292
Cracked and chipped brick on the ramp leading to the porch; note the concrete below the brick is stained and soiled.



Photo 293

The rest of this downspout on the north end of the building is missing; note that the wall and cornice are in good condition

34. ERIE RAILROAD BRIDGE

INTRODUCTION

The Erie Railroad Bridge, (see Photo 294), was constructed in 1932. The engineers for the project were A. Burton Cohen, Construction Engineers (1 Madison Avenue, NYC). The bridge was constructed for Erie Railroad to cross the park's main roadway in the northern division. The bridge is no longer used for railroad traffic as it is in a state of disrepair.

Original drawings and blueprints of the existing bridge are located at the Essex County Department of Parks, Recreation and Cultural Affairs (Newark, NJ). They include sections, plans and elevations. (See Original Drawings 25, 26). These drawings provide configurations and overall dimensions.

The Erie Railroad Bridge is a multiple-span, steel-reinforced, concrete slab bridge that rests on six separate concrete footings. The bridge is approximately 63' – 0" wide and 122' – 0" long. The top of the bridge is no longer being used and is overgrown with vegetation. Automobile, bicycle and pedestrian traffic moves underneath the bridge. The bridge is one of two railroad bridges that span across the park; the other is the Booton Line Bridge, which is still in use. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Erie Railroad Bridge.

DESCRIPTION/CONDITIONS

SITE

The Erie Railroad Bridge spans across the park in the northern division. Branch Brook Drive and two sidewalks run under the bridge. A grass median strip with an area of concrete paving divides the roadway. Under the bridge, the site is relatively flat and encompasses Branch Brook Drive an asphalt paved two-lane road, a median strip and two concrete paved sidewalks. (See Photo 298). Asphalt paved pathways on each side of the bridge lead to the areas of concrete paving under the bridge. Steep slopes overgrown with large trees, bushes and weeds, and strewn with garbage and debris characterize the site at each end of the bridge. North of the bridge is a parking lot and the park's visitors' center. South of the bridge, a sidewalk leads to the tennis center. To the east of the bridge is housing, and west of the bridge are apartment buildings.

CONCRETE

The Erie Railroad Bridge is constructed entirely of steel-reinforced concrete. Sixteen square columns support the concrete slab that functions as the bridge's deck and rest on 6 independent concrete footings. Two footings at each end of the bridge support the stepped wing walls and tracks leading to the bridge. Each of the four remaining footings are surmounted by a low wall at ground level and are capped by four square concrete columns. (See Photo 294). Two of these walls and columns stand astride each side of the roadway. The other two are placed on a median strip in the center of the road. The walls and columns support the concrete slab and tracks over the top of the bridge. The bridge's stepped wing walls arc out from the abutments and away from the road. (See Photo 295). The bridge's, parapet walls, columns, and most concrete surfaces are in fair condition. The most severe damage is to the lantern bases at the ends of each wing wall. (See Photos 299, 300). These concrete lantern

bases display severe spalling, cracking and vegetation overgrowth in some locations. Most concrete surfaces of the bridge display normal signs of wear and weathering. Forty percent of bridge surfaces are weathered, worn, soiled and covered with organic growth, paint or graffiti. Original concrete details remaining on the bridge include two concrete planters/lantern bases, which are located in the median strip directly north and south of the bridge. (See Photo 297). Other details include decorative panels, three on each side of the parapet wall, in a chevron design as well as the tapered and paneled columns.

The two parapet walls that face the train tracks are covered with graffiti. The concrete is in fair condition with some cracking and spalling. (See Photo 301). The surfaces of the exterior parapet walls are in good condition. Signs of normal wear and weathering are visible from the roadway and the bridge's deck. Areas of dark vertical staining are apparent on these surfaces. Dirt deposits building up on the concrete surfaces and then being washed down by rainwater cause this vertical streaking. (See Photos 293, 297). The underside of the bridge displays significant staining and soiling caused by water penetration and exhaust fumes. (See Photo 302). The interior base wall that faces the roadway is covered with white paint and a small mural. The four remaining low walls and columns are soiled and covered with graffiti and organic growth. Each of the four wing walls is terminated by a steel lantern surmounting a concrete base. The lanterns do not function and are in poor condition. (See Photo 303). Sections of the concrete parapet walls are patterned in a chevron design. The columns are faced with stepped-back panels and taper as they rise. (See Photo 297). On the underside of the bridge, all of the original recessed lighting fixtures are broken. (See Photo 303). The concrete surfaces contain no visible signs of significant spalling, cracking or chipping. The wing walls are in good condition overall. The concrete displays some signs of cracking and chipping, and some

of the walls have been covered with white paint. Organic growth is visible on the walls as well; however, in most areas the concrete is clean and in good condition.

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the railroad bridge. Inspect the cracking and spalling on the underside of the bridge to determine its structural integrity. Probe the top of the bridge, exposing some concealed areas to determine their structural integrity.

DIVISION 1: GENERAL REQUIREMENTS

- 1.1 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.2 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.3 Provide shoring and bracing, as required, for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF BRIDGE

- 2.1 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.2 Remove trees and large plants within 5' of bridge, based on consultation with a landscape architect.
- 2.3 Provide planting on bridge embankments, based on historic planting plans, including additional soil to restore the grade to historic levels and stabilize the embankments adjacent to the wing walls in a manner consistent with the historic design.
- 2.4 Provide grading and drainage of bridge embankments to prevent erosion and aid storm water management.

DIVISION 3: CONCRETE

- 3.1 Remove all significantly deteriorated concrete and replace in-kind based on scientific analysis of the original concrete.
- 3.2 Patch all minor damaged historic concrete with new concrete patching to match existing historic concrete in color, texture, composition and finish.
- 3.3 Use existing historic lantern bases and historic drawings to manufacture molds to replicate and reproduce current historic lantern bases.
- 3.4 Prepare and coat all exposed areas of structural steel reinforcing prior to concrete repairs.
- 3.5 Clean all concrete surfaces including the removal of all graffiti, mineral deposits and organic growth.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Repair or replace the wing wall, expansion joint fill material.

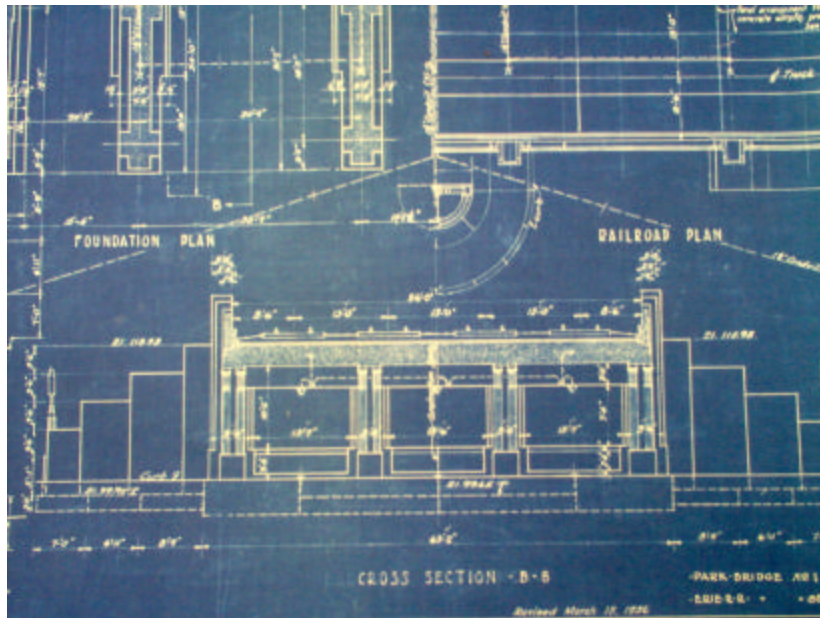
DIVISION 9: FINISHES

- 9.1 Remove existing paint on all bridge surfaces. New coatings to be provided based on performance analysis and SHPO approval.
- 9.2 Provide new mineral, silicate coatings to match the color of the original, based on scientific analysis of existing concrete. Coatings are to provide protection against continued erosion, water penetration and subsequent rusting of steel reinforcing. New coatings to be provided based on performance analysis and SHPO approval.

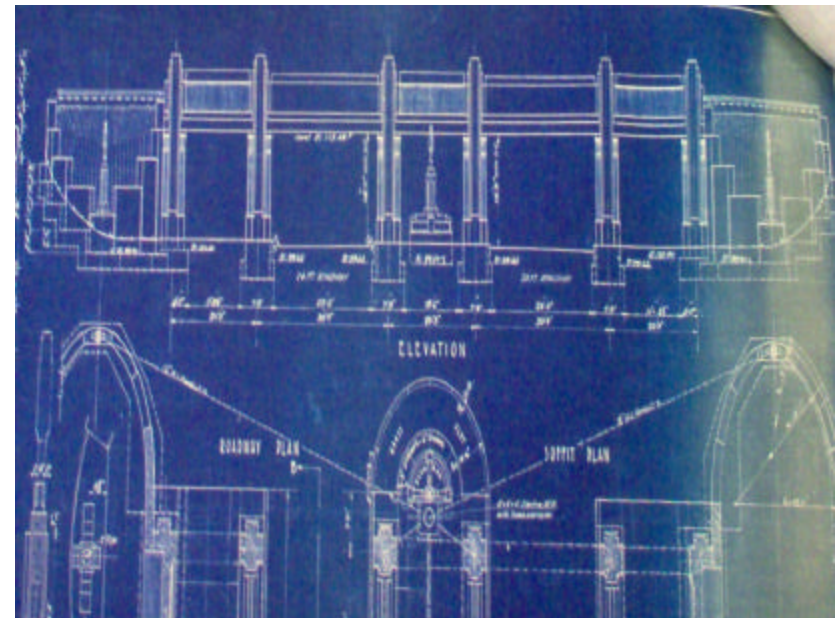
DIVISION 16: LIGHTING

- 16.1 Repair, where broken, or replace all ornamental light fixtures at the ends of the wing walls and at the north and south side of the bridge. New fixtures to match existing

original historic luminaries based on research and analysis of historical documents. Provide non-breakable lenses.



Original Drawing 25
This blueprint from an original drawing illustrates the bridge in section.



Original Drawing 26
This blueprint from an original drawing illustrates the bridge in elevation



Photo 294
View west towards the bridge; note the median strip in the middle of the road and the stepped concrete wing walls.



Photo 295
Four columns and a low wall that support the concrete slab over which the train tracks run.



Photo 296
One of the stepped wing walls arching out away from the bridge; note that a section of the wall is painted.



Photo 297
An original metal lantern atop a concrete base; note that the surface is severely rusted.



Photo 298
The south side of the bridge where the original streamline details of are clearly evident; note the effect of the vertical lantern and columns on the horizontal structure of the bridge.



Photo 299
View east underneath the bridge; note the graffiti and soiled surfaces.



Photo 300
The base of this lantern and the entire area is covered with vegetation.



Photo 301
This lantern is covered with rust, and the concrete base has severely deteriorated; note the exposed and rusting steel reinforcing.



Photo 302
The south parapet wall on the top of the bridge; note that the wall is covered with graffiti and the site is overgrown with weeds.



Photo 303
A detail of the concrete surfaces underneath the bridge; note the areas of peeling paint.



Photo 304
One of the broken recessed lighting fixtures on the underside of the bridge.

35. VISITOR'S CENTER

INTRODUCTION

The first building on this site was designed and built by the Essex County Parks Commission in 1937. The building was a wood structure of approximately 480 sq ft. No date is given for its demolition. The current visitor's center was designed by Wallace, Roberts & Todd Architects (Philadelphia, PA) in 1985. (See Photos 305, 306). It is generally visually consistent with the Park's historic architecture. The Visitor's Center functions as a senior citizen center with toilet rooms to the west, an entry lobby and billiard area in the center and a meeting room to the east. The spaces have cathedral ceilings behind the arched opening under the dormers. The facility is in good condition.

The visitor's center is a brick masonry structure with concrete trim. The building is approximately 44' - 4" from north/south and 85' - 5" east/west and rests on a concrete foundation. The building has a standing seam gable roof over the entrance and a hip roof over the main space. (See Photo 307). The bricks are laid in a running bond pattern. Bricks laid in a weave pattern are placed in the middle of the wall. Sections of concrete trim cap the walls in certain areas. This concrete trim also functions as a belt course and fascias on the building. A standing seam aluminum roof covers the building and extends 5' - 0" beyond the walls. (See Photo 308). This area is covered with a sheet aluminum soffit. Light fixtures have been placed within the soffit, many of which are broken. A sheet aluminum cornice surrounds the building on all sides. Roof cresting in a flabelliform design runs along the roof's ridge. (See Photo 309). The building's front entrance has a large circular window above the main door and is placed into a gable wall. Three brick dormers project from the

building's primary façade. Semi-circular windows set into each dormer are directly above three glass block windows. The primary feature on the building's rear façade is a three-sided, enclosed brick porch with three brick roman arch window or door openings. These openings have been covered with plywood on the outside and drywall on the inside so we were unable to determine their original function. Originally, there were three glass block window openings on the building's rear façade. Two still remain and the other has been covered with brick. The east façade has two glass block windows and two doorways. The east façade is currently a solid brick wall; however, preliminary investigations of the building reveals that there may have once been windows. Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the visitors' center

DESCRIPTION/CONDITIONS

SITE

The visitor's center is located in the park's extension, directly south of a series of baseball fields. The site is relatively flat overall but does slope down towards Branch Brook Drive on the west side. Directly south of the building is a semi-circular driveway, then a large asphalt paved parking lot. (See Photo 305). West of the building are bocce courts and Branch Brook Drive. East of the building is another area of bocce courts. In front of the main entrance is an area of concrete paving. To the east, west and north of the building are areas of dirt, gravel and grassy areas and ball fields to the north. (See Photo 306).

BRICK MASONRY

The visitors' center is faced with brick laid in a running bond pattern. The building's base is constructed from approximately 10 courses of brick masonry that project out about 4" from the wall. Brick dimensions are approximately 2 1/2" in height by 7 1/2" in width. The brick base has been painted dark brown along with the rest of the trim. The remaining brick masonry is painted light brown. Typically, the brick masonry walls and mortar joints are in good condition with some minor spalling and peeling paint. Most damage to the brick masonry has been caused by bird excrement. (See Photo 310). Pigeons have built nests on top of the walls and within some areas of the roof. Their excrement has stained areas of the wall, especially on the rear façade.

CONCRETE

The concrete trim on the building is in good condition overall with no signs of cracking or spalling. Most damage to the concrete trim has been caused by bird excrement. Pigeons have built nests on top of the walls and within some areas of the roof. Their excrement has stained areas of the trim, especially on the rear façade

SHEET ALUMINUM CORNICE AND SOFFITS

The sheet aluminum cornice and soffits are in fair condition, displaying minor denting in some areas. Seams in the cornice have opened on the building's rear and there is evidence that birds have built nests in these areas. (See Photo 311). Approximately four light fixtures in the building's soffits are broken.

GUTTERS AND DOWNSPOUTS

The gutters and downspouts appear to be in good condition overall. A downspout on the rear of the building displays signs of rusting. (See

Photo 312). Plant growth is visible in a gutter on the building's rear. (See Photo 313).

STANDING SEAM ROOF

The visitor's center has an aluminum standing seam roof. The roof is in good condition overall, displaying signs of normal wear and weathering. A metal skylight is visible from the building's interior. Visible signs of leakage are apparent at the north end of the skylight. Also, based on conversations with regular visitors, it appears that the roof leaks in other areas as well. Exterior air-conditioning units, vents, snow guards, and a television antenna are visible on top of the roof from the ground. Roof cresting runs along the ridge and is in good condition.

DOORS WINDOWS AND SKYLIGHT

The windows and doors are in good condition. The building has a total of nine glass block windows. Each window is approximately 4' - 0" in width by 5' - 4" in height. Visual inspections of the building reveal that at least two other windows have been filled in with brick. Above three of the glass block windows on the building's primary façade are semi-circular windows. In each of these windows the glazing is scratched. The window seals are in good condition. The front entrance has a glass and aluminum double door in good condition. Above this door is a circular window, divided into quarters by an aluminum sash this glazing is also scratched. The metal skylight has visible signs of leakage at its north end.

WORK PLAN

1. REHABILITATION PLAN

DIVISION 1: GENERAL REQUIREMENTS

General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.

- 1.1 Perform all work consistent with the "Guidelines for Restoration" of the US Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).

DIVISION 3: CONCRETE

- 3.6 Clean bird excrement and organic growth off all concrete surfaces.

DIVISION 4: MASONRY

- 4.1 Remove paint from brick masonry to reveal original brick color.
- 4.2 Rake and repoint selected brick masonry with mortar to match original.
- 4.3 Clean bird excrement and organic growth off all brick masonry surfaces.
- 4.4 Apply anti-graffiti protective coating to all concrete and masonry surface.
- 4.5 Install pigeon control system in areas where nesting is a problem.

DIVISION 5: METALS

- 5.1 Repair open seam in cornice at back of building.

DIVISION 7: THERMAL AND MOISTURE PROTECTION

- 7.1 Repair leak in skylight; investigate and repair other reported roof leaks.
- 7.2 Clean out all gutters.
- 7.3 Replace damaged downspouts.

DIVISION 8: WINDOWS AND DOORS

- 8.1 Remove infill to reopen windows and provide new metal windows to match original based on review of historic archival resources. Provide vandal-resistant plastic glazing.

DIVISION 16 LIGHTING

- 16.1 Replace all broken and missing light fixtures.



Photo 305
Overall view of the front façade.



Photo 306
Overall view of the rear façade from one of the baseball fields.



Photo 307
View of the hip roof from the bocce courts.



Photo 308
The roof extending over the building; note that it is in good condition.



Photo 309
The cresting on the ridge of the roof; note the snow guards on the left.



Photo 310
The dark brown concrete belt course; note the pigeons resting on top of it and the areas of staining by bird excrement.



Photo 311
The aluminum cornice on the building's rear has opened; note the bird nests inside and the excrement staining the brick and concrete.



Photo 312
Rusting and damaged downspout; note the organic growth on the bricks.



Photo 313
Plants growing in the gutters; note the staining on the bricks.



Photo 314
Large arched windows or doorways on the rear of the building; note that they are now covered with plywood.

36. BOOTON LINE BRIDGE

INTRODUCTION

The Booton Line Bridge, (see Photo 315), was constructed in 1936. The engineers' for the project were A. Burton Cohen, Construction Engineers (1 Madison Avenue, NYC). The bridge was originally constructed for the Delaware and Lackawanna Railroad, and the line terminated at the Hoboken Terminal. The bridge crosses the park's main roadway and the Second River in the park's extension. The bridge is currently being used by New Jersey Transit as part of their Booton Line Branch.

The Booton Line Bridge is a multiple span, steel reinforced, concrete arch bridge that rests on four separate concrete footings. Two footings at each end of the bridge support the wing walls and tracks leading to the bridge. The two remaining footings are placed at the bridge's center and surmounted by two separate concrete piers, reinforced with buttresses, which carry the bridge's weight and the thrust of the arches. (See Photo 315). The underside of each arch is smooth and this surface treatment extends approximately 4' - 0" along the vertical face of the arch's curve. The remaining vertical sections on the exterior face of the bridge are comprised of smooth-surfaced, alternating, recessed and flush concrete panels. (See Photo 316). This bridge is one of two railroad bridges that span across a section of the park; the other is the Erie Railroad Bridge and is no longer in use. The bridge has three separate arched spans. The first span crosses a dirt-covered area of the north side of the bridge. The second span crosses the Second River while the third span crosses an asphalt paved path and road. The bridge's parapet walls have crenellated tops that slope towards the deck. (See Photo 317). These walls are approximately 4' -

0" tall and covered with graffiti. The top of each pier extends beyond the height of the parapet wall and is also covered with graffiti. These pier caps have stepped and pointed tops. (See Photo 315). Annotated photographs provide visual images with detailed condition descriptions. Following are detailed descriptions, including conditions assessments, and a work plan for proposed remedial work of the Booton Line Bridge.

DESCRIPTION/CONDITIONS

SITE

The Booton Line Bridge spans across the park in the area known as the extension. Branch Brook Drive and one asphalt paved path runs under the southern span of the bridge. The center span crosses over the Second River. A steel pipe railing surmounts the river's stone retaining wall in this location. (See Photo 315). The north span crosses a dirt-covered area. Steep slopes overgrown with large trees, bushes, weeds, and strewn with garbage and debris characterize the site at each end of the bridge. To the north and west of the bridge are paths leading to Belleville Park. South of the bridge is housing, and directly east and west of the bridge are Branch Brook Drive and areas of well manicured grass.

CONCRETE

The Booton Line Bridge is constructed entirely from steel-reinforced concrete. Massive concrete footings and piers support the bridge's weight and support the thrust of the arches. Overall, the bridge's concrete is in fair condition. Some areas of the bridge do display severe damage including the underside of the arches and the base of the pier directly south of the Second River. Organic growth, including

moss and lichen, cover parts of these areas. All the support piers display areas of cracking, spalling and chipping concrete. Original concrete details remaining on the bridge include: buttresses that brace the piers, triangular foundation caps surmounting each footing and the recessed concrete panels on the external vertical face of the bridge.

The sloped concrete copings, pier caps and parapet walls are generally in good condition. Sections of concrete are covered with graffiti but in general that is the extent of the damage. (See Photo 318). The exterior vertical face of the parapet walls are in good condition and display normal wear and weathering. Though there are visible signs of spalling and cracking, especially at the joints. (See Photo 319). The underside of each arched span displays spalling cracking and soiled concrete. The most severe damage occurs along the cold joints, where moisture penetration and the adverse effects of freeze-thaw cycles damages the concrete. Severe water damage has blackened an area of the triangular foundation cap directly north of the river. (See Photo 320). Large areas of this arched span are also covered with green organic growth and have been darkened by water leeching through the cold joint that spans the length of the arch. (See Photo 321). The two other arched spans have similar damage and also include areas of mineral deposits and graffiti.

The most severely damaged area of the bridge is the pier located directly south of the river. The base of this pier has large areas of cracked and spalling concrete. (See Photo 322). Areas of severe damage extend from the ground to approximately 6' – 0" up the side of the pier. Exposed and rusting steel reinforcing is visible on most surfaces on the west side of this pier. (See Photo 323). Rust colored water staining is visible running down from cracks in the concrete on this pier as well.

WORK PLAN

STRUCTURAL INVESTIGATION

Examine the underside of the railroad bridge. Inspect the cracking and spalling on the underside of the bridge to determine its structural integrity. Probe the top of the bridge, exposing some concealed areas to determine their structural integrity.

DIVISION 1: GENERAL REQUIREMENTS

- 1.3 General Conditions including supervision, temporary facilities and temporary utilities and security during restoration.
- 1.4 Perform all work consistent with the "Guidelines for Restoration" of the U.S. Secretary of the Interior. Obtain approval from the NJ State Historic Preservation Office (SHPO).
- 1.5 Provide shoring and bracing as required for all work.

DIVISION 2: SITE WORK – WITHIN 10' OF BRIDGE

- 2.5 Remove and legally dispose of all debris from site, including: clearing away plant overgrowth and removal of all garbage.
- 2.6 Remove trees and large plants within 5' of bridge based on consultation with a landscape architect.
- 2.7 Provide planting on bridge embankments based on historic planting plans, including additional soil to restore the grade historic levels and stabilize the embankments adjacent to the wing walls.
- 2.8 Provide grading and drainage of bridge embankments to prevent erosion and aid water runoff.

DIVISION 3: CONCRETE

- 3.7 Remove all significantly deteriorated concrete and replace in-kind, based on scientific analysis of original concrete.

- 3.8 Patch all minor damaged historic concrete with new concrete patching to match existing historic concrete in color, texture, composition and finish.
- 3.9 Prepare and coat all exposed areas of structural steel reinforcing prior to concrete repairs.
- 3.10 Clean all concrete surfaces including the removal of all graffiti, mineral deposits and organic growth.

DIVISION 7 THERMAL AND MOISTURE PROTECTION

- 7.2 Repair or replace the expansion joint fill material in all locations on the bridge.

DIVISION 9 FINISHES

- 9.3 Provide new mineral, silicate coatings with color to match original based on scientific analysis of existing concrete. Coatings are to provide protection against continued erosion, water penetration and subsequent rusting of steel reinforcing. New coatings to be provided based on performance analysis and SHPO approval.



Photo 315
View east towards the bridge; note that this view of the park represents areas that are well maintained.



Photo 316
View looking southwest; note that alternating sections of the vertical face are slightly recessed.



Photo 317
The parapet walls on top of the bridge; note that sections are covered with graffiti and that this is still a function railroad bridge.



Photo 318
The parapet wall and pier cap on the west side of the bridge; note that large sections of the concrete surfaces are covered with graffiti.



Photo 319
Spalling is visible at the base of many vertical sections; note the crenellated parapet wall.



Photo 320
Black staining caused by water damage is visible on the arched span as well as on the foundation caps; note the graffiti and other types of soiling.



Photo 321
Spalled concrete and water-staining caused by water penetration and the adverse effects of freeze-thaw cycles.



Photo 322
The base of this pier is severely damaged; note the exposed and rusting steel reinforcing in many locations.



Photo 323

A detail of the pier base; note that this damage is significant and has been exacerbated by water draining down from above.