

New York City
Department of Parks and
Recreation

Fresh Kills Park

Phase 3A
Task 8.4.3
**Bridge Inspection
Report**

Final Report

New York City
Department of Parks and
Recreation

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Report**

August 2008

This report takes into account the
particular instructions and requirements
of our client.

It is not intended for and should not be
relied upon by any third party and no
responsibility is undertaken to any third
party

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1 Introduction

1.1 Background

The New York City Department of Parks and Recreation (NYCDPR) is planning for the development of a new 2,200 acre park on the site of the Fresh Kills Landfill, which is currently being closed in accordance with New York State Department of Environmental Protection (NYSDEC) requirements. The site is owned and operated by the New York City Department of Sanitation (DSNY). Upon completion of the park, it is anticipated that ownership of the site will pass to NYCDPR, although DSNY will continue to be responsible for monitoring, maintenance and operation of the landfill gas and leachate collection and processing systems.

A team of consultants led by Field Operations is assisting NYCDPR in planning the proposed Fresh Kills Park. Ove Arup and Partners Consulting Engineers, PC (Arup) is providing planning and design services for the civil engineering aspects of the project. Included in Arup's scope are the proposed roadways within the park. It is anticipated that two existing bridges within the site, carrying existing haul roads over Main Creek and Richmond Creek, will be retained and rehabilitated as part of the proposed internal park roadway system. Additionally, it is anticipated that existing internal haul roads along both shores of Fresh Kills that pass below the existing twin parallel West Shore Expressway (WSE) bridges over Fresh Kills will be rehabilitated and possibly widened to become part of the proposed internal park roadway system. Further discussion of the proposed park bridges may be found in the Bridge Alternatives Report issued in November 2007.

In support of conceptual planning for the proposed park roadway system, an in-depth inspection of the existing Main Creek and Richmond Creek bridges was conducted in April of 2008 by bridge engineers from Arup. Additionally, the abutment slope conditions, earth retaining structures, and shoreline conditions below the twin West Shore Expressway bridges on both shores of Fresh Kills were visually inspected. These bridges are located within the area of the proposed Park referred to as the Confluence Loop, as shown in Figure 1 General Location Plan presented in Appendix A.

The two existing bridges over Main Creek and Richmond Creek were constructed for and are owned and maintained by DSNY. They are not open to public use, and they are not included in the New York State Department of Transportation (NYSDOT) Bridge Inventory System (BIS), so they have not been assigned Bridge Inventory Numbers (BIN numbers), which normally are mounted on the abutments of all bridges in the state BIS.

The twin WSE bridges over Fresh Kills are owned by NYSDOT, identified by BIN numbers 1-06973-1 and 1-06973-2. The two WSE bridges themselves are not within the scope of this inspection. However, it is anticipated that the existing earth retaining structures at the toes of the abutment slopes will be rehabilitated or replaced with the existing DSNY service roads that pass below the WSE bridges on both the north and south shores of Fresh Kills.

Brief visual inspections of the bridges and the WSE underpasses were made on May 18, 2006 from the shores. The results of the visual inspections were presented in a memo dated May 23, 2006 that assessed the condition of the bridges. Both bridges were observed to be in generally good condition. Based on the 2006 visual inspection, it was anticipated that these bridges and the service roads below the WSE bridges can be modified economically to serve the needs of the Park.

These in-depth inspections were performed to verify the initial assessment and to obtain sufficiently detailed information to support rehabilitation design, if selected as the preferred option for these crossings.

1.2 Description of Inspection

The inspections were performed on April 7, 8 and 9, 2008 by Peter Matusewitch, P.E. and Michael Williams of Arup. Air temperatures during the inspection ranged from the low 40's (F) to the mid 50's (F). The skies were generally overcast throughout the inspection, with short periods of intermittent rain.

The scope of the inspections included in-depth condition inspection of the Main Creek and Richmond Creek bridges, in-depth condition inspection of the retaining walls at the toes of the embankment slopes at the abutments of the West Shore Expressway bridges, and a general conditions survey along the shores of Fresh Kills in the vicinity of the West Shore Expressway Bridges.

The Main Creek and Richmond Creek bridge decks, parapets and approaches were accessed by walking, as were the underpasses below the West Shore Expressway bridges. The underside of the deck and the above-water portions of the piers of the Main Creek Bridge were accessed by means of a small, shallow draft barge equipped with a single level of scaffolding, maneuvered by an outboard-powered aluminum runabout. The underside of the deck and the above water portions of the piers of the Richmond Creek Bridge were accessed by means of an articulated-arm aerial lift mounted on a deck barge, maneuvered by a towboat. The barges, aerial lift and boats were provided under a subcontract by Miller's Launch of Staten Island, NY.

The inspection of the bridge riding surfaces was entirely visual. Access by barge permitted 100% hands-on inspection of the under-deck portions of the bridges. All concrete surfaces both above and below deck (including the parapets, underside of deck, pier caps and pier columns) presenting any indications of distress were sounded with chipping hammers to find areas of delamination. All bearings were examined closely for indications of being frozen or of abnormal displacements. All anchor bolts were sounded with chipping hammers as well. Field notes were recorded, and photographs were taken to document the conditions.

Diving inspection of the underwater portions of the bridge piers and protective timber dolphins; fathometric surveys of the streambeds of Main and Richmond Creeks or Fresh Kills; and coring of the bridge decks and test pits of the earth fill below the deck of the Main Creek Bridge were originally to be included in the scope of these in-depth inspections. However, since the rehabilitation of the bridges will not be included in the scope of the first phase of construction, those investigations have been deferred to a later phase of the project.

1.3 NYSDOT Inspection Forms

NYSDOT maintains a specific format for the biennial, interim and special inspections routinely conducted by the state for all bridges in the NYSDOT Bridge Inventory System. As these bridges are not in the NYSDOT Inventory and these in-depth inspections were conducted for NYCDPR, not NYSDOT, this report does not use the standard NYSDOT Bridge Inspection Report forms and sheets. However, the format of this report generally follows that of the standard NYSDOT Bridge Inspection Report. For reference only, the NYSDOT Bridge Inspection summary forms TP349 and TP350 have been completed and are presented as Appendices.

The NYSDOT inspection process assigns numerical condition ratings to the various components of a bridge, as well as an overall condition rating. The state condition ratings use a scale of 1 to 9, defined as follows:

- 1 Totally deteriorated, or in failed condition.
- 2 Used to shade between ratings of 1 and 3.
- 3 Serious deterioration, or not functioning as designed.
- 4 Used to shade between ratings of 3 and 5.
- 5 Minor deterioration, but functioning as originally designed.
- 6 Used to shade between ratings of 5 and 7.
- 7 New condition. No deterioration.
- 8 Not applicable.
- 9 Condition and/or existence unknown.

These numerical ratings are used for the NYSDOT summary inspection forms attached as appendices. This report does not otherwise use these numerical condition ratings, but relies instead on qualitative and quantitative descriptions.

1.3.1 Bridge Orientation

NYSDOT assigns a geographic orientation for each bridge in its Inventory, which determines the designations of the abutments, piers and fascias. The abutments are designated such that one is looking in the direction of the bridge orientation when standing at the Begin Abutment, looking across the bridge to the End Abutment. If the orientation is east, then the West Abutment would be designated as the Begin Abutment. The piers are numbered starting from the first pier adjacent to the Begin Abutment. The fascias are designated Left and Right, again looking from the Begin Abutment to the End Abutment.

Since these bridges are not in the state Inventory, no orientations have been assigned to them. For use on the TP349 and TP350 summary forms, orientations have been assumed based on the pier numbering systems shown on the original design plans. The remainder of this in-depth report uses the actual geographic designations only (East and West Abutments; North and South Fascias, etc.)

2 Main Creek Bridge

2.1 Description of the Bridge

Figures 2 through 6 in Appendix B present the General Plan, Elevation and Section of the bridge and various structural details. Photos MC01 through MC08 in Appendix D show the general configuration of the bridge, approaches and waterway. Photo MC09 shows the small barge and runabout used to inspect the underside of the bridge.

Completed in 1993, this structure crosses Main Creek roughly $\frac{1}{4}$ mile east of the confluence with Richmond Creek. Constructed low to the water, the bridge provides roughly 8 ft. of clearance below the superstructure to Mean High Water (MHW). The superstructure comprises 21 simply supported spans carrying granular earth fill and a continuous asphalt riding surface. The bridge is 523.5 ft. long between the centerlines of the abutments. The end spans are each 24.25 ft. long and the 19 interior spans are each 25 ft. long.

Each span comprises 11 contiguous 1.5 ft. thick by 4.0 ft. wide prestressed concrete voided slabs with grouted shear keys, plus a precast concrete fascia on each side with a narrow horizontal slab and a vertical parapet wall, together forming an integral L shape. The prestressed slabs and precast fascia units sit on $\frac{7}{8}$ in. thick elastomeric bearings comprising two $\frac{3}{8}$ in. layers of elastomer separated by a $\frac{1}{8}$ in. thick steel sheet. The bearings under the prestressed slabs are 8 in. wide by 1 ft.-6 in. long, and the bearings under the parapet units are 8 in. wide by 2 ft. long. The bearings are provided with a 2 in. diameter center hole through which steel anchor rods pass, grouted into both the precast slabs and the pier caps, providing positive vertical and lateral restraint.

A 6 in. thick cast-in-place reinforced concrete deck works integrally with the prestressed slabs, overlain by a waterproof membrane. Preformed elastomeric compression seal joints are set in formed transverse pockets in the concrete deck above each pier and at the abutments, and preformed bituminous joint seals are provided between the parapet walls at each pier. Small ductile iron scuppers with parallel slot grates are provided in the cast-in-place concrete deck to drain the granular fill, with PVC downspouts. Gravel filters measuring 2 ft. x 2 ft. x 6 in. deep are provided over each underdrain scupper. The drained water falls into Main Creek.

The roadway is a flexible pavement comprising a granular earth subbase course of varying thickness topped with a 6 in.-thick asphalt riding surface. Consistent with its non-public use as part of the DSNY service road system, there are no lane marking on the pavement. Two small ductile iron scuppers with parallel slot grates are provided in each span to drain the roadway, one near each parapet wall, set in concrete headers. The drained water falls into Main Creek through PVC downspouts.

The vertical-faced precast concrete parapets rise roughly 4 ft. above the roadway surface. Each is provided with a 6 in. by 8 in. timber rub rail at the top inside face and there are 11 ft.-high chain link fences mounted on top of the parapets. The roadway is 50 ft. wide face-to-face of the timber rub rails.

The superstructure is supported on 22 precast concrete pile caps each founded on 6 vertical 3 ft.-diameter prestressed concrete pipe piles. The end pile bents are provided with concrete backwalls so they can serve as abutments, and there are small concrete wingwalls on each side of each abutment, parallel with the bridge. Steel sheet piling was driven behind the abutment piers with a cast-in-place concrete pile cap matching the elevation of the abutment pile cap and separated by a $\frac{1}{2}$ in. thick premolded bituminous joint filler, to relieve the earth pressure on the abutment. The sheet piling turns back at 45° angles

beyond the wingwalls (without a concrete cap) to provide flanking slope retention, cut-off at lower elevations. The shorelines below and on either side of the bridge on the west shore are stabilized with a mixture of stone rip-rap and stone-filled gabions. The shoreline on the east shore is naturally vegetated.

There are 4 dolphins comprising 3 timber piles each in the water roughly 10 ft. south of the south fascia, in line with Piers 5, 6, 7 and 8. As the bridge is very low to the water, only small craft can transit the bridge, so the timber dolphins serve as much to protect the small craft from the bridge piers as vice-versa.

The approaches have asphalt riding surfaces continuous with the bridge. Precast movable concrete Jersey barriers are provided on each side of each approach. Chain link fences are provided behind the barriers.

Three utility lines are carried outboard of the north parapet, supported on galvanized steel brackets anchored to the parapets. These are DSNY utilities for the operation of the landfill systems. There are 7 – 25 ft. high lighting standards mounted on top of the north parapet, one each in the centers of Spans 2, 5, 8, 11, 14, 17 and 20. Mounted atop each standard is a 250 watt high pressure sodium floodlight-type luminaire.

2.2 Orientation and Numbering

On the original bridge design drawings the piers are numbered 1 through 22, from west to east, with Pier 1 also labeled as the West Abutment and Pier 22 also labeled as the East Abutment. In the NYSDOT BIS the abutments are designated solely as abutments, with only the intermediate piers given numbers. For this report, following the state numbering convention, the westernmost pier, labeled Pier 1 on the original design drawings, is designated solely as the West Abutment, not Pier 1. The next pier (the first intermediate pier), labeled Pier 2 on the original design drawings, is designated as Pier 1, and so on through Pier 20 (the final intermediate pier), which was labeled Pier 21 on the original design drawings. The easternmost pier, labeled Pier 22 on the original design drawings, is designated solely as the East Abutment, not Pier 22. These designations are shown on Figure 2 in Appendix B.

Solely for use on the state TP349 and TP350 Bridge Inspection Report forms, included in Appendix C, east has been assigned as the bridge orientation. The West Abutment has been designated as the Begin Abutment and the East Abutment has been designated as the End Abutment. The North Fascia has been designated as the Left Fascia and the South Fascia has been designated as the Right Fascia.

2.3 General Condition

The bridge generally is in good condition, and is functioning as designed, rating 5 overall. The most notable problems are associated with the roadway and deck. The roadway surface is in poor condition and the earth fill appears to be slowly washing out through the underdrain system and between the parapet panels. If the bridge is to be retained, a long-term solution to the problem of the earth fill should be developed during rehabilitation design. The timber rub rails and chain link fences on the parapets are in poor condition as well. There is extensive wetness on the pier caps indicating that the deck joints below the earth fill are leaking. Some of the wingwalls are damaged, and there are some spalls on the pier cap beams. None of these conditions compromise the bridge structurally.

2.4 Abutments and Wingwalls

2.4.1 Bearings

The bearings at both abutments are in good condition, with only minor surface deterioration noted on the exposed faces of the neoprene pads. There is no evidence of movement or dislocation of the bearings.

2.4.2 Bridge Seat and Pedestals

The abutments seats, which are the tops of the precast pier caps, are not visible for inspection, since the precast slabs are contiguous. The pedestals are in good condition, with only normal minor cracks and small corner spalls.

2.4.3 Backwalls

The concrete backwalls are not visible for inspection, since the precast slabs are contiguous. The steel sheet piling and concrete caps driven behind the abutments also are not visible for inspection.

No indications of movement or other distress was observed at the east abutment. There is a pair of closely spaced, irregular transverse grooves in the pavement above the west abutment, at roughly the location of the sheet piling behind the backwall, of a type typically associated with an excavation for installation of a utility or a subsurface repair or retrofit. There is no record or visual indication of a utility installation at this location, so the grooves could be an indication of some kind of distress or dislocation of the backwall or reinforcing sheet piling. See Photo MC 10. The only way to access this condition would be test pits in the approaches directly behind the abutment, which is recommended during rehabilitation design.

2.4.4 Stems

The precast concrete pier caps serve as the abutment stems. They are in good condition with only normal minor cracking noted. Photos MC11 and MC12 illustrate the condition of the stems.

2.4.5 Wingwalls

The small concrete wingwalls at the southwest and southeast corners of the bridge are in poor condition, with extensive breakup. The concrete wingwalls at the northwest and northeast corners of the bridge are in good condition with only normal minor cracking noted. Photos MC13 through MC15 illustrate these conditions.

2.4.6 Erosion or Scour

There is no evidence of scour or erosion of the streambed or shoreline at the toes of the abutments. The shore in front of the west abutment is stabilized with stone rip-rap in good condition. See Photo MC11. High water does not reach the west abutment. The shore in front of the east abutment is hard-packed and stable, with signs of minor erosion. High water reaches almost to the toe of the east abutment. See Photo MC12.

The embankments at the west abutment wingwalls are stabilized with stone rip-rap in good condition. See Photos MC18 and MC19. The embankments at the east abutment wingwalls are stable earth with natural vegetation. See Photos MC20 and MC21.

2.5 Stream Channel

2.5.1 Stream Alignment

The bridge is located at a narrowing of the creek. See Photo MC16. The stream alignment appears to be stable.

2.5.2 Erosion and Scour

A fathometer survey, including probing for scour holes at the piers, has been deferred to a later phase of the project.

2.5.3 Waterway Opening

There is adequate freeboard, roughly 6 ft., at high water. See Photo MC17. The water does not reach up either abutment stem at high tide, as indicated by the absence of permanent water stains on the stems (Photos MC11 and MC12), such as are seen on the pier piles in Photo MC17. Observation of stream flow below the bridge did not reveal any significant increase in flow velocity or any areas of significant turbulence below the bridge.

There are protective dolphins comprising three timber piles each on the south side of the bridge in line with Piers 5, 6, 7 and 8. See Photo MC07. The dolphin at Pier 8 is in poor condition. See Photo MC22. The other three dolphins are in fair condition. See Photo MC23.

2.5.4 Bank Protection

The west shore under the bridge and to the north and south is stabilized with stone rip-rap and gabions, all in good condition. See Photos MC11, MC18 and MC19. The east shore is stabilized by natural vegetation and shows no signs of significant erosion. See Photo MC20. There is extensive accumulation of earth and debris in the mud flats below Spans 18, 19, 20 and 21 on the east shore. See Photo MC24.

2.6 Approaches

2.6.1 Drainage

There are no drainage basins provided on either approach. Both approaches are on slight grades upwards from the bridge, so water drains down to the bridge scuppers in Spans 1 and 21. There are no curbs to channel water, but the concrete barriers on either side of each approach act to channel water down to the bridge scuppers.

2.6.2 Settlement

There is settlement evident on both approaches behind the abutments, particularly near the north and south side barriers, causing water to pond. See Photos MC25, MC26, MC28 and MC29.

2.6.3 Pavement

The approach pavements are in poor condition, providing poor ride quality. There are cracks, humps, delaminations, potholes, patches and depressions from settlement on both approaches. There are a number of utility manholes in the west approach that are not level with the pavement surface. They appear to be missing their covers and are filled with dirt. They may be of the type that has a second, lower cover, so the earth fill may only extend down a short distance and may not fill the manholes. The exposed rims are in poor condition. Further investigation is recommended during rehabilitation design.

2.6.4 Guiderrails

The precast concrete Jersey barriers on the approaches are in fair condition, with evident impact damage and scraping. They have displaced laterally from impacts and vertically as the approaches have settled.

Photos MC01 thru MC04, and MC25 through MC31 illustrate the conditions on the approaches.

2.7 Deck Elements

2.7.1 Bridge Pavement

The 6 in. thick riding surface is in fair to poor condition, providing an uneven ride quality. Figure 7 in Appendix D presents the condition of the bridge pavement.

There are numerous longitudinal and transverse cracks, and some potholes. The pavement surface undulates, with many depressions where water ponds. It appears that the granular earth fill is slowly washing out through the underdrain system and between the adjacent parapet panels at the piers. See also Sections 2.7.3 and 2.7.4 below. Photos MC32 thru MC40 illustrate typical conditions.

2.7.2 Fascias

The bridge fascias are formed by the outside faces of the precast concrete parapet units. The fascias are in good condition with only minor deterioration. Photo MC07 illustrates the condition of the fascias.

2.7.3 Drainage Scuppers

The roadway drainage scuppers are in poor condition. Of the 42 scuppers on the bridge, 5 are partially clogged; 16 are completely clogged; 9 are completely clogged and are missing their gratings; 5 are missing their gratings but are open and functioning; and 7 are in good condition. The loss of fill material has caused many depressions adjacent to the scuppers. Since the scuppers are set in concrete headers, they have not settled, leaving them higher than the adjacent pavement. This decreases their ability to drain water even when they are not clogged. Photos MC39 thru MC42 illustrate typical conditions.

The underdrain scuppers set into the concrete deck below the granular fill cannot be inspected visually. The downspouts are visible below the bottoms of the prestressed slabs and generally are in fair to good condition. There is a significant build-up of earth and extensive brown staining on the downspouts, indicating that the earth fill is actively washing out. Photos MC43 and MC44 illustrate the downspout conditions.

2.7.4 Parapets and Fences

The parapets are in fair condition. The concrete is sound throughout and still functioning as intended. However, the timber rub rails and fences are in poor condition.

The timber rub rails are missing over 90% of the south parapet and 25% of the north parapet, with anchor bolts sticking out. The remaining timber rub rails on both parapets are badly deteriorated.

The fence on the south parapet is in fair to poor condition. A 10 ft. section of the fence is missing at the beginning of Span 1, and the fence is badly damaged in Span 9. The chain link mesh in Spans 12 through 21 has been replaced with a lighter weight mesh that is in poor condition. There are many bent and missing posts, and most of the horizontal rails are missing in these spans.

Photos MC45 through MC60 illustrate the condition of the parapets, rub rails and fences.

The bituminous joint filler in the parapet joints between adjacent spans at the piers has worked out, or is working out, at many locations. Photos MC61 and MC 62 illustrate this condition. There is active water leakage through the gaps between adjacent parapet panels throughout the bridge. This can be seen in Photos MC61, MC62, MC68, MC81 and MC82.

2.8 Superstructure

2.8.1 Structural Deck

As there is granular fill and an asphalt riding surface above the concrete deck, and the precast slabs are contiguous, the deck cannot be inspected visually from either above or below. Test pits and cores were recommended to investigate the condition of the deck and waterproofing membrane. Since rehabilitation of the bridges is not part of the first phase of the park development project, the recommended testing program has been deferred to a later phase.

2.8.2 Primary Members

The primary members of each span are the prestressed voided concrete slabs and the two exterior precast concrete L-shaped parapet units. The tops of the slabs are covered by the concrete deck, earth fill and riding surface, so they could not be visually inspected. The bottom surfaces were inspected and sounded from below, using a small barge.

The bottoms of the slabs and parapet units are in good condition. The concrete is sound, with no areas of delamination, cracking or map cracking found. No staining, wetness or efflorescence was evident that would indicate water intrusion or rebar or prestressing corrosion. At some locations the foam filler rods placed between the slabs to prevent loss of shear key grout during construction are working out. This condition is unsightly, but is of no structural consequence. Photos MC63 through MC65 illustrate the condition of the underside of the slabs.

2.8.3 Joints

There are no joints in the roadway pavement, which is continuous across the bridge and approaches. There are compression seal joints in the concrete deck below the granular fill at each pier and abutment. These seals are not visible for inspection. However, water was observed on the tops and down the vertical faces of several pier capbeams, indicating that water is coming through the deck joints or cracks in the deck. The loss of the bituminous filler material in the parapet joints may also be contributing to the active water leakage and loss of earth fill. Photos MC66 through MC68 illustrate these conditions.

2.9 Piers

2.9.1 Bearings

The low elastomeric bearings generally are in good condition. See Photo MC69. One slightly damaged bearing was noted at Pier 11 below Slab 2, which appears to have occurred during construction. The damage does not seem to interfere with the proper functioning of the bearing. See Photo MC70.

An elastomeric pad is projecting from one location below Slab 1 at the east face of Pier 6. There appears to be a bearing in the proper location under Slab 1. The projecting pad may have been used as a shim during construction and left in place. This location should be investigated further during rehabilitation design. See Photo MC71.

2.9.2 Pedestals

The concrete pedestals generally are in good condition. Photos MC72 and MC73 are typical. There are small spalls at the corners of some pedestals, illustrated in Photo MC74, which are minor and do not undermine the bearings.

At Pier 13, Slab 3, some of the cement used for the pedestal was bad, and the concrete disintegrated. See Photo MC75. The soft concrete was removed with a chipping hammer down to sound concrete. See Photo MC76. The remaining concrete under the bearing

appears to be sound. The pedestal concrete should be tested to determine the cause of the failure and assess whether the condition is localized or will continue to progress.

At some locations, grout used to set the anchor rods through the centers of the bearings overflowed and deposited on the pedestals and vertical faces of the pier caps. See Photo MC77. This condition does not appear to be interfering with the functioning of the bearings.

At a number of piers, lumber presumably used for forming during construction was left in place, preventing visual inspection of the pedestals and bearings. Photo MC78 is typical. During rehabilitation design, this lumber should be removed to permit visual inspection of the obscured bearings and pedestals.

2.9.3 Top of Pier Caps

As the prestressed slabs are contiguous, only small areas of the tops of the pier caps are visible. The visible areas generally are in good condition. At a small number of locations, some dirt and debris has accumulated. Photo MC 79 is typical.

2.9.4 Cap Beams

The cap beams generally are in good condition, with only normal minor cracking observed on the east and west vertical faces. Photo MC80 is typical. At 4 locations, the end corners of the cap beams have spalled as listed below:

1. Pier 4, southeast corner (Photo MC81): small spall with no exposed rebar, probably caused during construction or a vessel impact.
2. Pier 5, northwest corner (Photo MC82): small spall with no exposed rebar, probably caused during construction or a vessel impact.
3. Pier 6, southeast corner (Photo MC83): Large spall with exposed rebar, probably due to water intrusion and corrosion of the rebar.
4. Pier 12, southeast corner (Photo MC84): Large spall with exposed rebar, probably due to water intrusion and corrosion of the rebar.

2.9.5 Piles

The piles above low water generally are in good condition, with tight cracks and some map cracking observed. Photos MC80, MC85 and MC86 illustrate the condition of the piles. Where piles were overdriven, they were extended with short segments as can be seen in Photo MC87. A diving inspection to assess the condition of the underwater portions of the piles has been deferred to a later phase of the project.

At Pier 9, the second and fourth piles from the north end were driven out-of-plumb, one towards the east and one towards the west. To address this, longitudinal sub-cap beams were added in Span 10 below the Piers 9 and 10 cap beams, configured to fit atop the two errant piles. See Photos MC88 and MC67. Reinforcing through-rods were also added at the remaining piles in Pier 9 in grouted pockets (Photo MC89). Two of the rods pockets were not grouted.

2.9.6 Erosion or Scour

A fathometer survey and diving inspection, including probing for scour holes at the piers, has been deferred to a later phase of the project.

2.10 Utilities

2.10.1 Lighting Standards and Fixtures

All of the lighting standards and luminaries are in good condition to visual inspection. As the inspection was done during daylight hours, it is not known if all of the luminaries are functioning. An in-depth electrical inspection is recommended during rehabilitation design.

2.10.2 Utilities

The three utilities carried on the north fascia are in good condition visually, as is the galvanized steel frame supporting them. Photos MC90 to MC94 illustrate the condition of the utilities and supports. As these are landfill systems, further coordination with DSNY for in-depth condition assessment is recommended during rehabilitation design.

There is an electric chord strung between the lighting standards connecting with utility poles on either end of the bridge. The function of the chord is unknown, but it does not appear to connect to the bridge lighting. It appears to simply cross the bridge. Further coordination with DSNY regarding this line is recommended during rehabilitation design. Photo MC02 shows the lighting standards and luminaries.

3 Richmond Creek Bridge

3.1 Description of the Bridge

Figures 8 through 15 in Appendix E present the General Plan, Elevation and Section of the bridge and various structural details. Photos RC01 through RC09 in Appendix G show the general configuration of the bridge, approaches and waterway. Photo RC10 shows the barge, aerial lift and tugboat used to inspect the underside of the bridge.

Completed in 1989, the bridge crosses Richmond Creek roughly 800 ft. to the south of the confluence with Main Creek. Constructed at a higher profile than the Main Creek Bridge, it provides roughly 18.5 ft. of clearance above MHW above the defined navigation channel. The bridge is 558.5 ft. long center-to-center of the abutments, with 7 simply supported spans. The end span on each shore is 79.25 ft. long, and the 5 interior spans are each 80 ft. long.

The superstructure comprises 9 prestressed concrete girders 6 ft.-4 in. deep, spaced at 6 ft.-3 in., with a composite 10 in. concrete deck. The girders sit on both fixed and expansion type elastomeric bearings. The bearings at both abutments and Pier 3 are fixed. Each of the other piers has one row of fixed bearings and one row of expansion bearings. The fixed bearings are plain elastomeric bearings that include a single ½ in. thick neoprene layer bonded to 2 upper and 2 lower steel plates to provide sufficient height clearance. The expansion bearings are laminated elastomeric bearings. The ones at Piers 1, 2, 5 and 6, designated Type 1, include two ¾ in. thick neoprene layers separated by a ¼ in. thick steel plate, bonded to 2 upper and 2 lower steel plates to provide sufficient height clearance. The ones at Pier 4, designated Type 2, include 5 layers of ¾ in. thick neoprene separated by 4 – ¼ in. thick steel plates, bonded to single upper and lower steel plates. Reinforcing upper and lower guide bars are included on each bearing.

There are cast-in-place concrete diaphragms perpendicular to the girders at roughly the one-third points in each span. Pairs of diaphragms in adjacent bays are collinear, with continuous rebars extending through the outside girder webs and bolted to the outside faces. The pairs are offset from each other to remain along the intermediate skew line. End diaphragms are provided at each pier and abutment, set along the skew angle, with threaded rebars extending through the fascia beam webs and bolted on the outside with beveled washers.

There is a 1½ in.-thick asphalt wearing course on the concrete deck, with armored compression seal joints in the roadway at each pier and abutment, in concrete headers. Consistent with its non-public use as part of the DSNY service road system, there are no lane marking on the pavement. Vertical faced concrete parapets are provided on each side of the bridge, 5 ft.-6 in. high, with 9 in. by 15 in. timber rub rails mounted on top, and 6 ft.-high chain link fences mounted on top of the rub rails. The roadway is 50 ft. wide face-to-face of the timber rub rails. Two small ductile iron scuppers with parallel slot grates are provided in each span to drain the roadway, one near each parapet wall. The drained water is carried down to galvanized steel closed box troughs below the deck through galvanized steel downspouts. The troughs are provided with short downspout outfalls over the abutment slopes.

The superstructure is supported on 6 reinforced concrete pier caps skewed at 28 degrees to the bridge longitudinal centerline, founded on steel pipe piles. Piers 3 and 4, on either side of the center navigation channel, are founded on 6 - 30 in. diameter piles. The two end piles are each battered outward (transverse to the bridge centerline). They are protected on the navigation channel sides by steel pipe pile supported steel fenders with timber rub rails.

Piers 1, 2, 5 and 6 are founded on 8 piles each. The two end piles are 30 in. diameter piles battered outward (transverse to the bridge centerline). There is a pair of 24 in. diameter piles adjacent to each end pile that are battered in opposite longitudinal directions. Between the two pairs are two additional 30 in. diameter vertical piles.

An impressed current cathodic protection system has been provided to protect the steel pipe piles from corrosion. Current on the north side is supplied from the lighting system, and a 1" PVC conduit along the bottom outside face of the south fascia girders provides current for the south side. Wires carrying the current are grounded to threaded inserts in the north and south faces of each cap beam welded to rebar. A 3/4" galvanized steel cable runs from the ground strap to aluminum anodes placed on the riverbed at the north and south ends of each pier.

The two abutments are standard concrete stub abutments, founded on 8 steel pipe piles configured the same way as Piers 1, 2, 5 and 6. There are concrete wingwalls at each corner. The abutment slopes below the bridge are stabilized with grouted stone rip-rap.

The approaches are asphalt roadways. There are short sections of box beam guiderails on both sides of both approaches that do not connect to the bridge parapets, and chain link fences extending beyond the approaches. There are concrete Jersey barriers on the south side of the west approach beginning roughly 50 ft. from the bridge.

Two insulated utility lines are carried on the north side of the bridge supported from the outside face of the fascia concrete beam below deck level, plus a single PVC utility line carried below the support frame. These are DSNY utilities for the operation of the landfill systems. There are unused galvanized steel support brackets at the top of the outside face of the north parapet that were originally installed for a future fire control system that was never installed. A single insulated utility line is carried on the south side of the bridge supported from the outside face of the fascia concrete beam below deck level, plus 3 galvanized steel conduits supported on the brackets at the top of the parapet originally installed for the fire control system. These are also DSNY utilities for the operation of the landfill systems.

There are 6 junction boxes in the inside face of the north parapet originally installed as fire valve cabinets for the future fire control system, one each in Spans 1, 2, 3 and 5, and two in Span 7.

There are timber lighting standards and standard roadway luminaires mounted on the north parapet at each pier and abutment, for a total of 8 standards and fixtures.

The Creek is lined with timber supported wire mesh debris fences north of the bridge, which extend parallel to the bridge on the north side, with a floating debris boom, leaving only a portion of Span 4 open for navigation.

3.2 Orientation and Numbering

In the original design drawings the bridge is stationed from west to east and the piers are numbered from west to east. For the purposes of the NYSDOT Bridge Inspection forms, included in Appendix F, the bridge orientation has been assumed to be east. The West Abutment has been designated as the Begin Abutment and the East Abutment has been designated as the End Abutment. The North Fascia has been designated as the Left Fascia and the South Fascia has been designated as the Right Fascia. The pier numbering from west to east has also been adopted.

3.3 General Condition

The bridge is generally in good condition, and is functioning as designed, rating 5 overall. The most notable problems are associated with the pavement, parapets and bearings. The drainage scuppers are clogged, the roadway pavement along the parapets is in poor condition, and the roadway joint at Pier 1 appears to be leaking. There are areas of spalling and delamination on the inside faces of the parapets, scattered areas of deterioration of the timber rub rails, and the fences are in poor condition. Cracks have developed in the guide bar welds of some bearings, and there is some scattered cracking at the bearing ends of three concrete girders. None of these conditions compromise the bridge structurally.

3.4 Abutments and Wingwalls

3.4.1 Bearings

The fixed elastomeric bearings at both abutments are in good condition, with only minor paint loss and surface corrosion. There is no evidence of dislocation or distress. Photos RC13 and RC14 are typical.

3.4.2 Bridge Seat and Pedestals

The abutments seats and pedestals are in good condition, with only normal scattered minor tight cracks and a small amount of scattered debris on the seats.

3.4.3 Backwalls

The concrete backwalls are in good condition with only normal scattered minor tight cracks.

3.4.4 Stems

The concrete stems are in good condition with only normal scattered minor tight cracks. Photos RC11 and RC12 illustrate the condition of the stems, pedestals and backwalls.

3.4.5 Wingwalls

The concrete wingwalls are all in good condition. Photos RC15 through RC18 illustrate the condition of the wingwalls.

3.4.6 Erosion or Scour

The abutment slopes are stabilized with large grouted rip-rap in good condition. There is no evidence of scour or erosion of the streambed or shoreline at the toes of the abutments or wingwalls. Photos RC19 through RC21 illustrate the condition of the slopes.

3.5 Stream Channel

3.5.1 Stream Alignment

The stream dimensions are fairly constant in the vicinity of the bridge. See Photo RC05. The stream alignment appears to be stable.

3.5.2 Erosion and Scour

A fathometer survey, including probing for scour holes at the piers, has been deferred to a later phase of the project.

3.5.3 Waterway Opening

There is adequate freeboard, providing over 18 ft., at high water. The water does not reach up either abutment stem at high tide, as indicated by the absence of permanent water stains on the stems (Photos RC11 and RC12). Observation of stream flow below the bridge did not reveal any significant increase in flow velocity or any areas of significant turbulence below the bridge.

The fenders on the channel faces of Piers 3 and 4 are in generally good condition. There is some small loss of galvanizing on the steel frame and moderate weathering of the timber rub rails. See Photos RC22 and RC23.

3.5.4 Bank Protection

The banks in the vicinity of the bridge are stabilized with grouted rip-rap in good condition. The banks beyond are stabilized with natural vegetation and appear to be stable. See Photo RC24. The timber and wire mesh debris fences and floating boom are in good condition. See Photos RC06 through RC09.

3.6 Approaches

3.6.1 Drainage

There are no drainage basins provided on either approach. Both approaches slope down away from the bridge. There are no curbs to channel water.

3.6.2 Settlement

There is no settlement evident on either approach behind the abutments or on the immediate approaches. See Photos RC03 and RC04

3.6.3 Pavement

The approach pavements generally are in good condition, providing good ride quality. There are patches on either side of both approaches where the pavement edges have eroded or settled in the past. See Photos RC03 and RC04.

3.6.4 Guiderails

The box beam guiderails on both approaches are in good condition with minor loss of galvanizing and some small displacement of posts. See Photo RC25.

3.7 Deck Elements

3.7.1 Bridge Pavement

The bridge pavement is in good condition in all spans over most of the width of the roadway. Along the 3 ft. wide strips between the parapets and the drainage scuppers on both sides of the roadway the pavement is extensively broken up with many potholes and delaminations. Figure 16 in Appendix G presents the condition of the roadway surface. Photos RC01 and RC02 illustrate the general condition of the roadway. Photos RC26 through RC28 illustrate the extent of pavement break-up along the parapets.

3.7.2 Fascias

The bridge fascias are formed by the outside faces of the outboard precast concrete beams, and the parapets. The fascias are in good condition with only normal scattered minor cracking in the parapet faces. Photos RC06 through RC08 illustrate the condition of the fascias.

3.7.3 Drainage Scuppers

The roadway drainage scuppers are in poor condition. Of the 12 scuppers on the bridge, 2 are partially clogged and the remaining 10 are completely clogged. Photos RC29 and RC30 are typical. The galvanized steel downspouts to the collection troughs are in good condition. The closed box collection troughs below deck are also in good condition, and drain onto the abutment slopes. See Photos RC11 and RC31. The four downspout outfalls at the abutments are in poor condition with extensive corrosion of the downspouts and the troughs around them. See Photo RC32.

3.7.4 Parapets and Fences

The parapets are in fair condition. There are a number of spalls and delaminations on the inside faces of the concrete parapets and small scattered areas of rotten or damaged timber rub rails. The fences are in poor condition, with many of the top rails separated from the posts and displaced upwards, taking the chain link mesh with it. The absence of bent posts indicates that this condition is likely due to wind effects, not impacts. Figures 17 and 18 in Appendix G present the condition of the parapets. Photos RC01, RC02, RC33 and RC34 illustrate the general condition of the parapets, rub rails and fences. Photos RC35 through RC39 illustrate typical areas of concrete deterioration.

3.8 Superstructure

3.8.1 Structural Deck

As there is an asphalt riding surface above the concrete deck, and steel stay-in-place forms, the deck cannot be inspected visually from either above or below. The steel forms are in good condition, as illustrated in Photos RC40 and RC41.

Cores were recommended to investigate the condition of the deck. Since rehabilitation of the bridges is not part of the first phase of the park development project, the recommended testing program has been deferred to a later phase.

3.8.2 Primary Members

The prestressed concrete girders are in good condition. Photo RC42 shows a general view of the underside of the superstructure. Minor deterioration was found at three locations:

1. Span 4, Girder 4, north face, 4 ft. from the Pier 3 bearing: a small spall with exposed rebar on the bottom flange of the girder (see Photo RC43).
2. Span 2, Girder 5, south face at the end of the girder above the Pier 1 bearing: a crack in the bottom flange (see Photo RC44).
3. Span 2, Girder 4, north face at the end of the girder above the Pier 1 bearing: a crack in the bottom flange (see Photo RC45).

These conditions are not serious, and can be addressed by patching the spall and injecting epoxy grout into the cracks.

Additionally, the steel bearing sole plates anchored into the girders have corroded at some locations. This corrosion, if unchecked, may eventually cause some cracking and spalling of the girder concrete. See Section 3.9.1 below.

3.8.3 Secondary Members

Both the intermediate and end concrete diaphragms between the prestressed girders are in good condition. See Photos RC46 and RC47. The threaded rebars that were extended through the girder webs and bolted were not painted, and are all corroding. See Photos RC48 through RC50. At one intermediate diaphragm location in Span 4, at Girder 7, the nuts have walked off entirely or were never installed. See Photo RC51. At one end diaphragm location in Span 7, at the outboard face of Girder 9 at the east abutment, the nuts have loosened. See Photos RC52 and RC53.

3.8.4 Joints

The armored compression joints at the piers and abutments generally are in good condition. See Photos RC54 through RC56. There is evidence that, although visually in good condition, the roadway joint at Pier 1 is leaking more than the other joints. See Section 3.9 below.

3.9 Piers

The general configuration of the piers can be seen in Photos RC57 and RC58.

3.9.1 Bearings

The bearings generally are in good condition, with minor to moderate paint loss and corrosion. Photos RC59 through RC61 are typical. The expansion bearings appear to be functioning as designed, as illustrated in Photo RC61. At 5 locations crevice corrosion has caused welds between guide bars and bearing plates to crack, with distortion or detachment of the guide bars, as listed below:

1. Pier 1, Span 1, Girder 3 Type 1 expansion bearing: the weld between an upper guide bar and the upper bearing plate has cracked, opening a small gap (Photo RC62).
2. Pier 1, Span 1, Girder 5, Type 1 expansion bearing: the weld between an upper guide bar and the upper bearing plate has cracked, and the guide bar has distorted (Photo RC63).
3. Pier 1, Span 2, Girder 7 fixed bearing: the weld between an upper guide bar and the upper bearing plate has cracked, and the guide bar is partially detached (Photo RC64).
4. Pier 2, Span 3, Girder 8 fixed bearing: the weld between an upper guide bar and the upper bearing plate has cracked, and the guide bar has fallen off (Photo RC65).
5. Pier 3, Span 4, Girder 2 fixed bearing: the weld between a lower guide bar and the lower bearing plate has cracked, opening a small gap (Photo RC66).

There is generally more paint loss and corrosion on the bearings at Pier 1 than the other piers or abutments, indicating that the roadway joint at Pier 1 is leaking more than the other joints.

3.9.2 Pedestals

The concrete pedestals generally are in good condition. The condition of the pedestals is illustrated in Photos RC47, RC59 through RC61 and RC66. Minor deterioration was found on the Pier 2, Span 2, Girder 6 pedestal, where there is delamination and a spall on one face (Photo RC67).

3.9.3 Top of Pier Caps

The tops of the pier caps are all in good condition with no deterioration found, and only scattered areas of minor debris build-up. Photo RC68 is typical.

3.9.4 Cap Beams

The cap beams generally are in good condition with only normal scattered minor cracks, as illustrated in Photos RC22, RC23, RC42 and RC69.

3.9.5 Piles

The portions of the steel pipe piles above the low water line generally are in good condition, with some loss of paint and corrosion around the high water elevation line and at the tops of the piles at the interface with the concrete cap beams, as illustrated in Photos RC19 through RC21, RC69, RC70 and RC71. A diving inspection to assess the condition of the underwater portions of the piles has been deferred to a later phase of the project.

The wires and ground straps of the impressed current cathodic protection system are all in good condition. See Photo RC72. Note that while cathodic protection systems are highly effective at protecting the portions of the piles that are always underwater, they offer little or

no protection for the portions of the piles in the tidal zone or the splash zone. Thus, the existence of corrosion in the tidal and splash zones does not necessarily indicate that the system is not working. An electrical inspection of the system is recommended during rehabilitation design.

3.9.6 Erosion or Scour

A fathometer survey, including probing for scour holes at the piers, has been deferred to a later phase of the project.

3.10 Utilities

3.10.1 Lighting Standards and Fixtures

All of the timber lighting standards and roadway luminaires are in good condition. See Photos RC73 and RC74. As the inspection was done during daylight hours, it is not known if all of the luminaires are functioning. An electrical inspection of the system is recommended during rehabilitation design.

3.10.2 Utilities

The utilities carried on both fascias are in good condition visually, as are the galvanized steel supports. Photo RC06 illustrates the general configuration of the utilities on the north side. Photo RC75 illustrates the condition of the north supports. Photo RC76 illustrates the termination of the utilities at the northeast wingwall.

Photos RC07 and RC08 illustrate the general configuration of the utilities on the south side. Photo RC77 illustrates the condition of the south side supports for the insulated line. Photo RC78 illustrates the configuration and condition of the three upper conduits on the south side. Photos RC54 and RC55 illustrate the termination of the three conduits at the east and west abutments. Photo RC79 illustrates the termination of the insulated utility at the southwest wingwall. As these are landfill systems, further coordination with DSNY for in-depth condition assessment is recommended during rehabilitation design.

Five of the 6 unused junction boxes in the north parapet wall are missing their covers. Photo RC80 is typical. One still has its cover, shown in Photo RC81. See Figures 17 and 18 in Appendix G for the locations of the junction boxes.

All of the utility support brackets attached to the two fascia concrete beams have back-up plates on the inboard face of the girder webs, in good condition. Photo RC82 is typical.

4 West Shore Expressway Underpass Roads

4.1 General

The West Shore Expressway (WSE) passes over Fresh Kills and DSNY landfill haul roads on both the north and south shores on twin steel bridges. The WSE bridges have standard stub type abutments, with slopes down to the haul roads, which are aligned close to the shores.

This inspection was done to document those conditions that are relevant to the rehabilitation and possible expansion of the haul roads for use in the proposed park roadway network.

4.2 North Shore

Figure 19 in Appendix H presents a Section of the north haul road below the north bridges. Photos WSE01 and WSE02 in Appendix I illustrate the general configuration of the roadway and bridges on the north shore. Consistent with its non-public use, there is no pavement striping on the roadway.

The abutment slopes are stabilized with stone rip-rap in good condition, as shown in Photos WSE03 and WSE04. The haul road is flanked by concrete Jersey barriers on both sides, and is 36 ft. wide face-to-face of the barriers.

The barriers generally are in good condition. Photo WSE05 is typical. On the abutment side of the road the barriers serve to retain the abutment slope, and are backed-up with galvanized steel posts also in good condition, as shown in Photo WSE06.

As can be seen in Figure 19, the barriers at the toes of the abutment slopes are some distance from the nearest battered piles supporting the two north abutments, so it would be feasible to widen the roadway by roughly 10 ft. towards the abutments without disturbing or undermining the abutments. The barriers on that side would have to be replaced with an appropriate earth retaining structure roughly 5 to 6 ft high.

The shoreline below the bridges slopes steeply down to the waterline immediately beyond the barrier, and is stabilized with large stone rip-rap. Fill retained by a bulkhead would be required to expand the width of the roadway towards the water side. Photos WSE07 and WSE08 illustrate the condition and width of the shoreline beyond the barrier.

4.3 South Shore

Figure 20 in Appendix H presents a Section of the south haul road below the south bridges. Photos WSE 09 through WSE12 in Appendix I illustrate the general configuration of the roadway and bridges on the south shore. Consistent with its non-public use, there is no pavement striping on the roadway.

The abutment slopes are stabilized with smaller stone and gravel in good condition, as shown in Photo WSE13, which is typical for both bridges. The haul road is flanked on the abutment side by a concrete crib wall reaching roughly 6 ft. in height above the roadway and on the water side by a concrete Jersey barrier with a chain link fence mounted on top. The roadway is 26 ft. wide between the faces of the crib wall and the barrier, which is 10 ft. narrower than on the north shore.

The concrete barriers and fence on the water side is in fair condition, with some damage from impact and scraping.

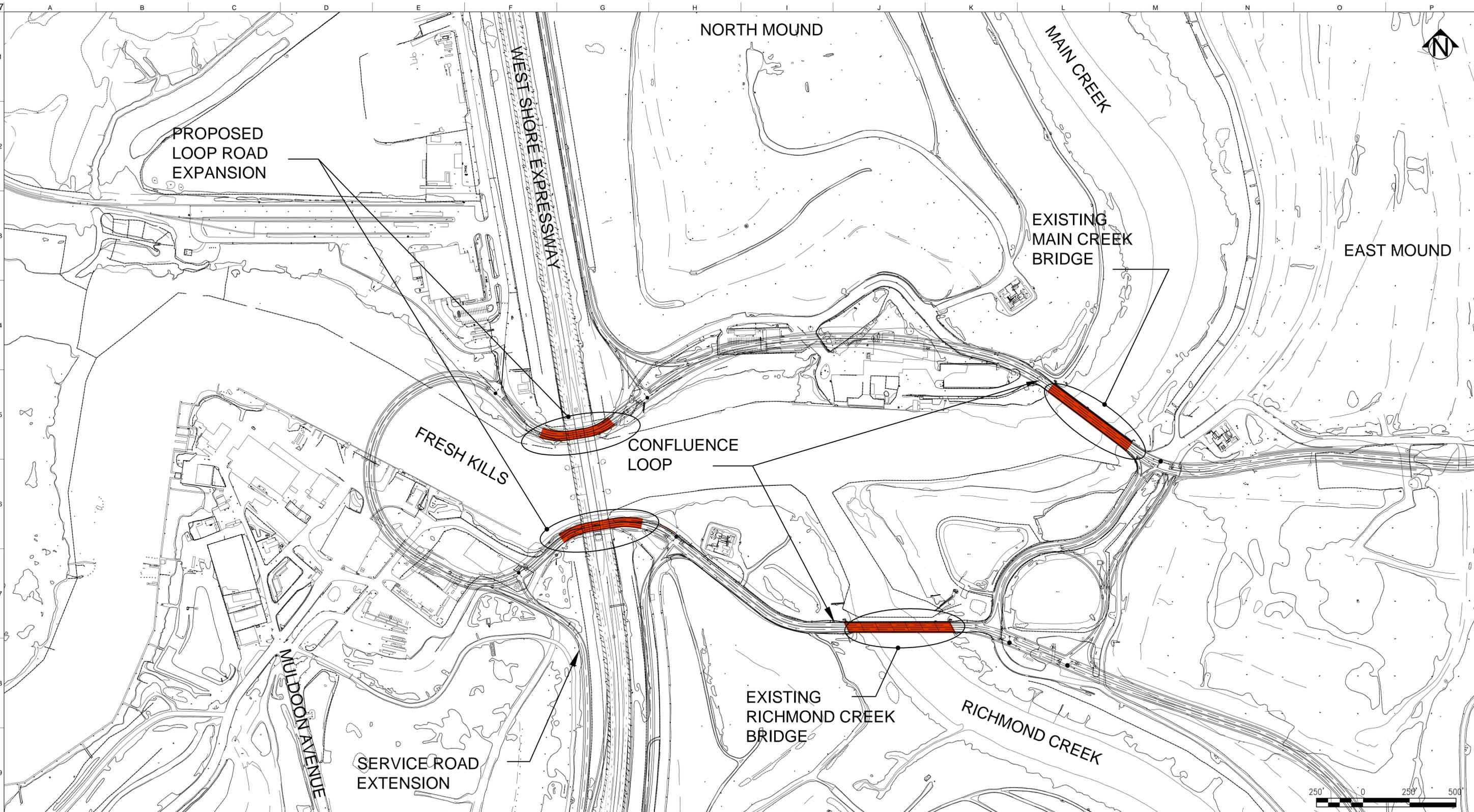
The concrete crib wall is in poor condition with extensive spalling with exposed rebar and dislocation of crib members. Photos WSE14 through WSE20 illustrate the condition of the crib wall in-depth. This wall will need to be replaced when the road is rehabilitated.

As can be seen in Figure 20, the crib wall is already as close to the nearest row of battered piles supporting the abutments as can be allowed. The road could only be expanded further towards the abutments if the crib wall was replaced with a vertical retaining wall such as pile and lagging, which would free up some of the area currently occupied by the crib. The crib depth is unknown, but this could potentially gain roughly 4 or 5 ft.

The shoreline beyond the barrier is not stabilized with stone rip-rap, but it is wider than on the north shore and slopes down less steeply, as illustrated in Photos WSE21 and WSE22, so there would be more room for expansion in that direction without a bulkhead. However, since the roadway is currently only 26 ft. wide, it is likely that fill retained by a bulkhead would still be required.

Appendix A

General Location Plan



Client
 NEW YORK CITY
 DEPARTMENT OF PARKS
 AND RECREATION

Job Title
 FRESH KILLS PARK

Key Plan

Drawing Title
FIGURE 1
 LOCATION PLAN

ARUP

155 Avenue of the Americas
 New York NY 10013
 Tel (212) 229 2669 Fax (212) 229 1056
 www.arup.com

Scale 1"=500'-0"

File Name LOCATION PLAN.DWG

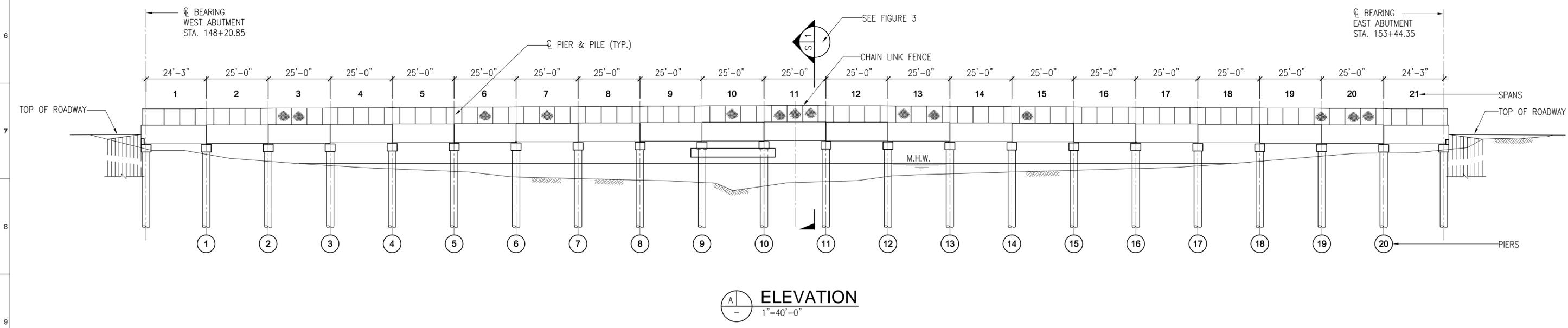
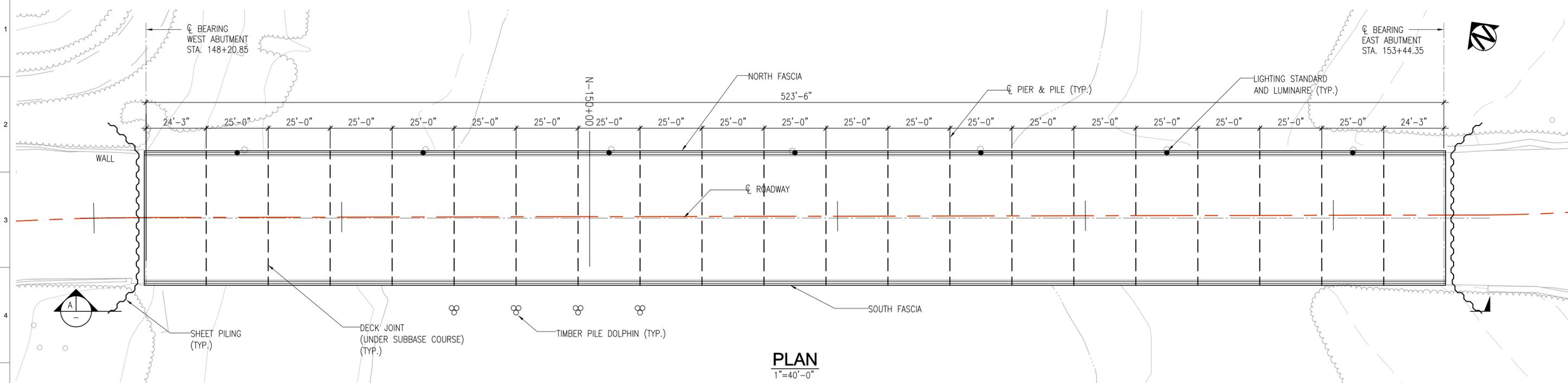
Drawing Status
BRIDGE INSPECTION REPORT

Job No 131730-00	Drawing No	Issue
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Issue	Date	By	Chkd	Appd

Appendix B

**Main Creek Bridge
Drawings**



Client
NEW YORK CITY
DEPARTMENT OF PARKS
AND RECREATION

Job Title
FRESH KILLS PARK

ARUP

155 Avenue of the Americas
New York NY 10013
Tel (212) 229 2669 Fax (212) 229 1056
www.arup.com

Key Plan

Drawing Title
**FIGURE 2
MAIN CREEK BRIDGE
PLAN AND ELEVATION**

Scale
1"=40'-0"

File Name
MC - EXISTING CONDITIONS-1.DWG

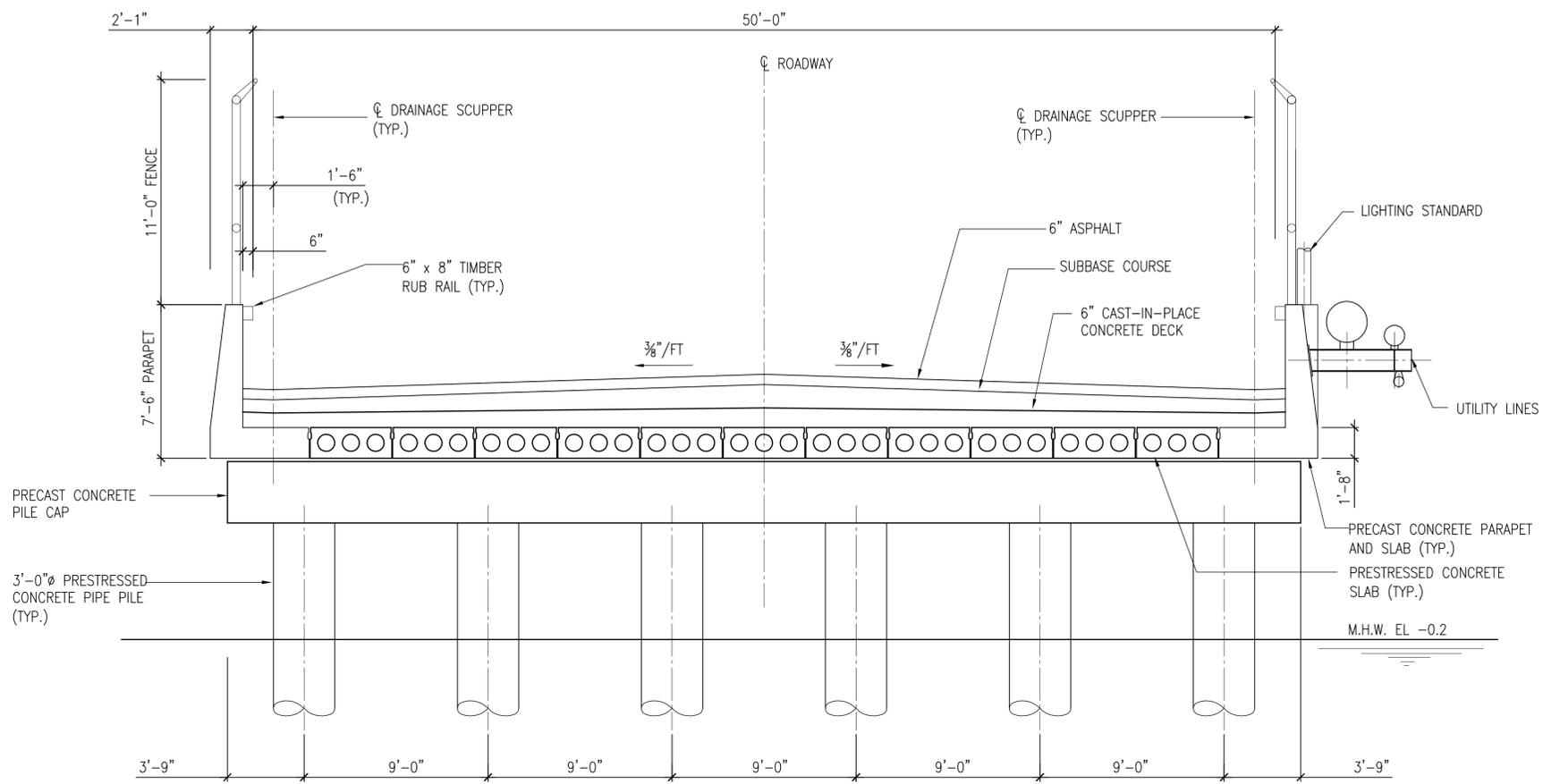
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BRIDGE INSPECTION REPORT

Page B1

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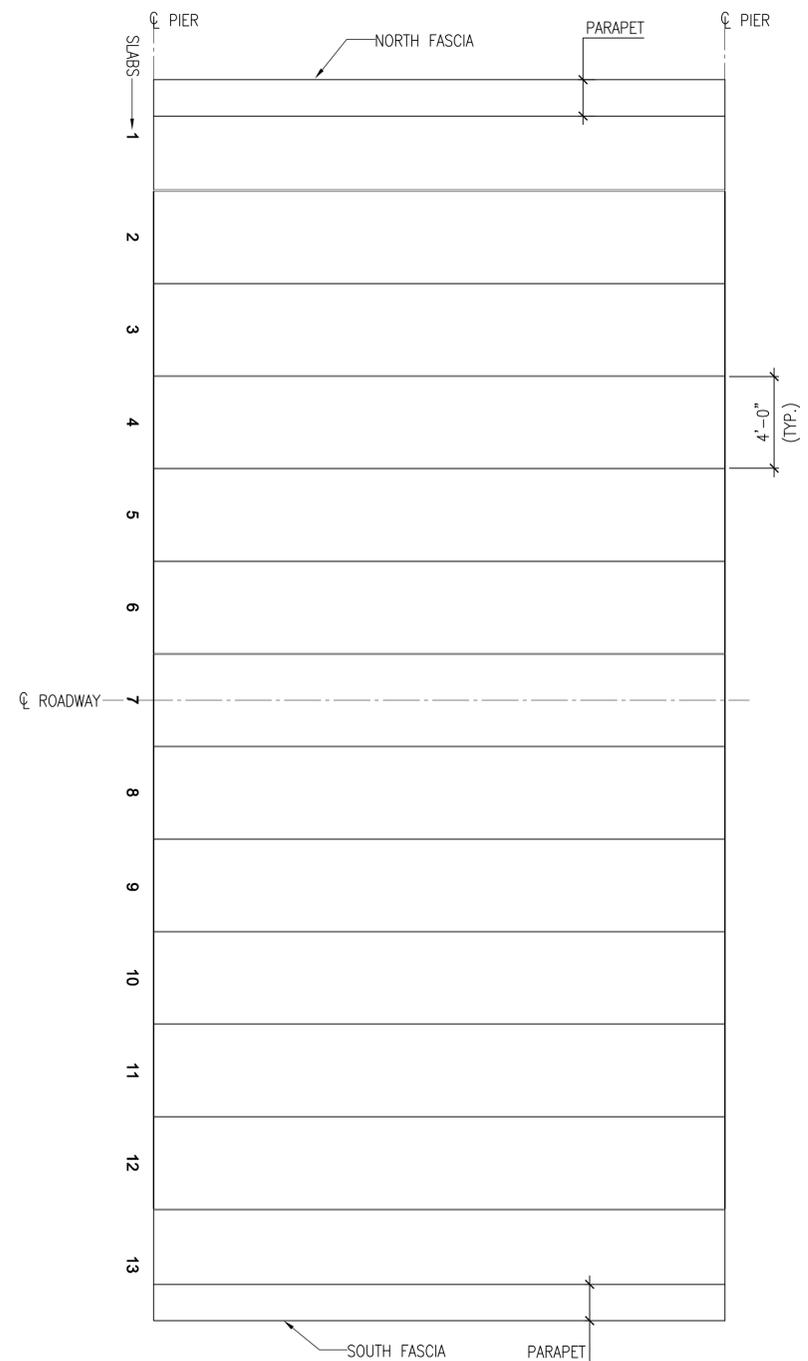
Drawing No
Issue

Issue	Date	By	Chkd	Appd



SECTION
1/8"=1'-0"

SEE FIGURE 2



TYPICAL SPAN - PLAN OF PRECAST SLABS
1/8"=1'-0"

Client
NEW YORK CITY
DEPARTMENT OF PARKS
AND RECREATION

Job Title
FRESH KILLS PARK

ARUP

155 Avenue of the Americas
New York NY 10013
Tel (212) 229 2689 Fax (212) 229 1056
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Key Plan

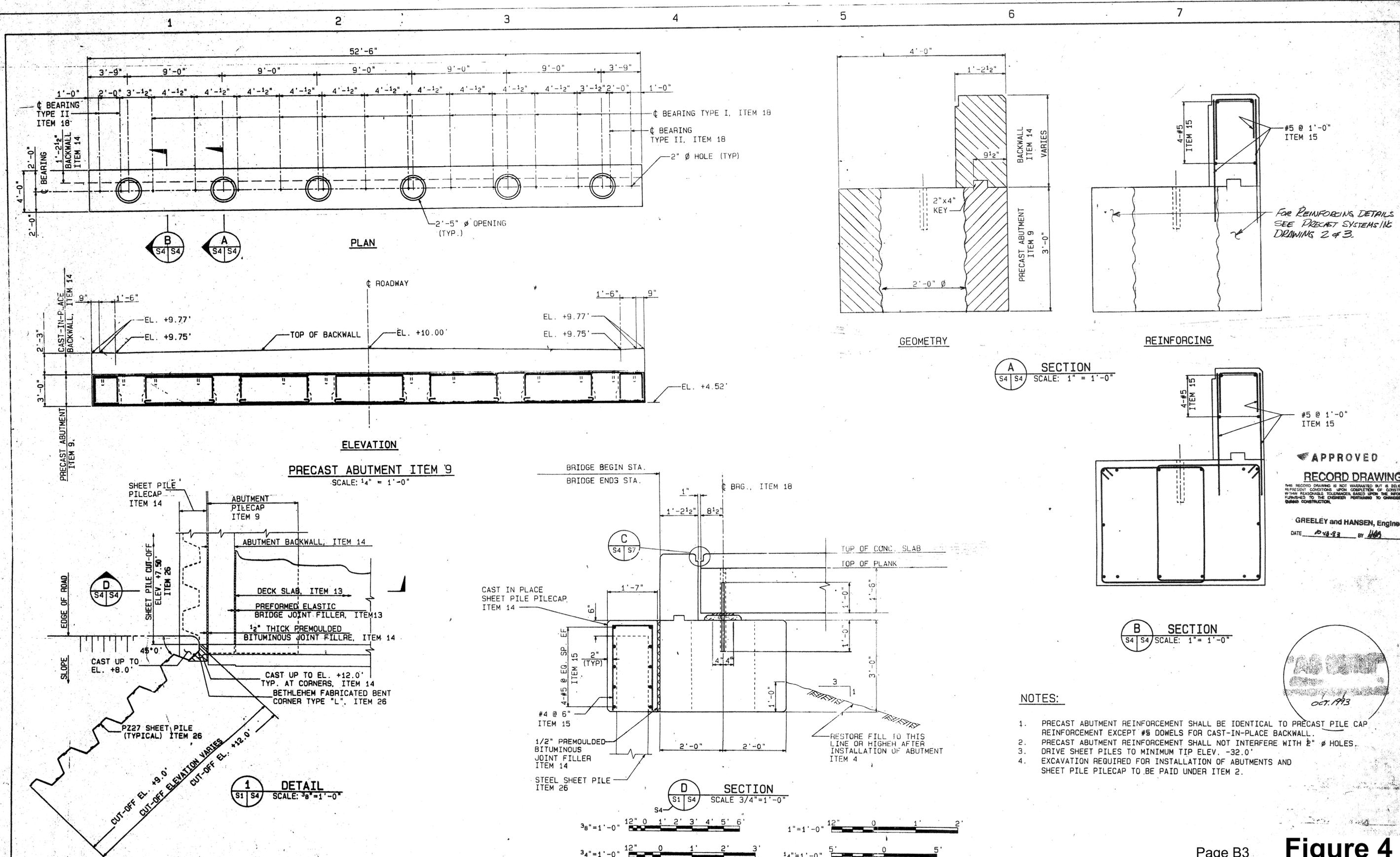
Drawing Title
**FIGURE 3
MAIN CREEK BRIDGE
SECTION AND
FRAMING PLAN**

Scale 1/8"=1'-0"
File Name MC - EXISTING CONDITIONS-2.DWG
Drawing Status
BRIDGE INSPECTION REPORT

Issue	Date	By	Chkd	Appd

Job No
131730-00

Drawing No Issue



APPROVED
RECORD DRAWING
 THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO ACCURATELY REPRESENT THE WORK AS PERFORMED UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CORRECT CONSTRUCTION.
 GREELEY and HANSEN, Engineers
 DATE 10-28-83 BY HMA



NO.	DATE	DESCRIPTION	APPR'D.
REVISIONS			

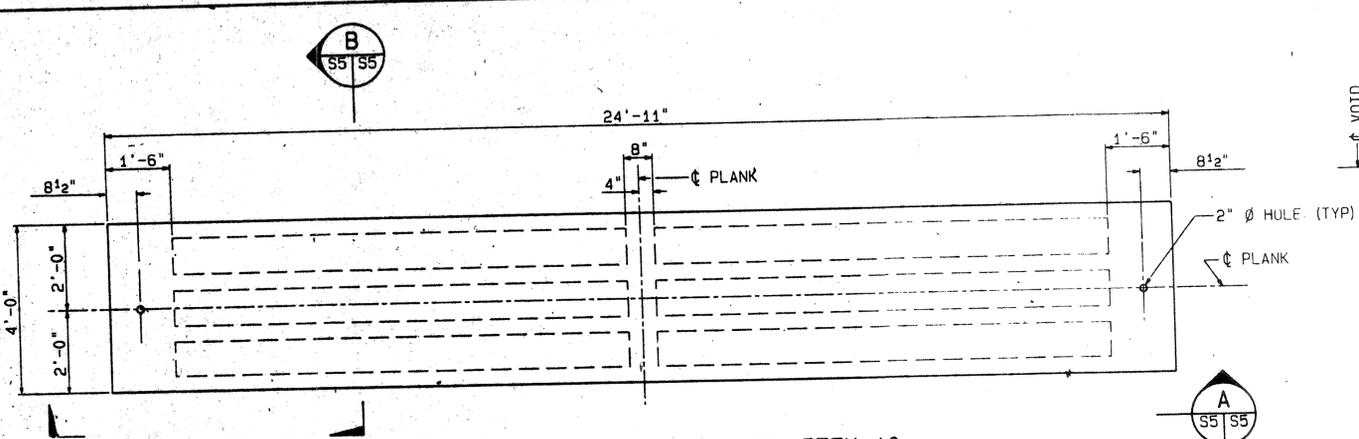
DES. BY _____
 DR. BY _____
 CK. BY _____
 "AS-BUILT"
 02/10/84 1983

PILE FOUNDATION
 CONSTRUCTION CO., INC.
 75-02 AMSTEL BLVD.
 ARVERNE, NY 11692

THE CITY OF NEW YORK
 DEPARTMENT OF SANITATION
 WASTE MANAGEMENT AND FACILITIES DEVELOPMENT

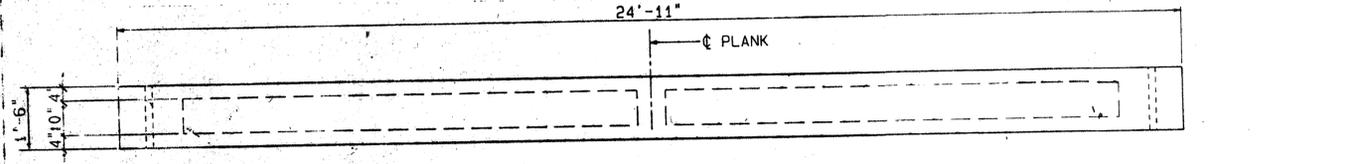
CAPITAL PROJECT S111/340
 MAIN CREEK BRIDGE CROSSING
 FRESH KILLS LANDFILL FACILITY

DATE MARCH 29, 1989
 SHEET 12
 OF 21



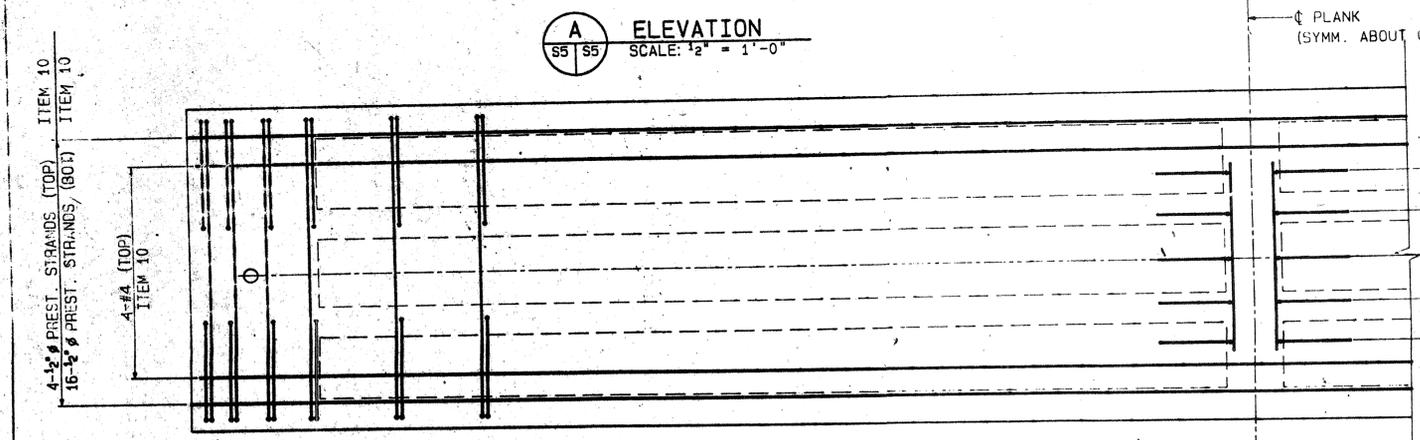
PRESTRESSED CONCRETE PLANK, ITEM 10

PLAN
SCALE: 1/2" = 1'-0"



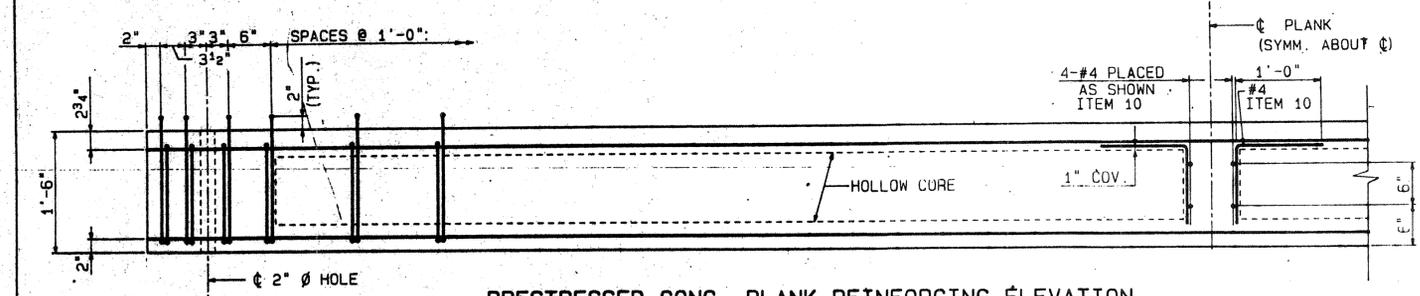
ELEVATION

SCALE: 1/2" = 1'-0"



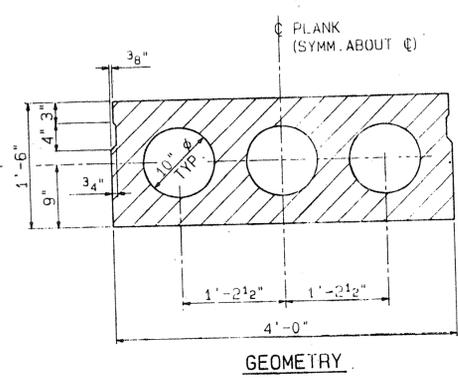
PRESTRESSED CONC. PLANK REINFORCING PLAN

SCALE: 1" = 1'-0"



PRESTRESSED CONC. PLANK REINFORCING ELEVATION

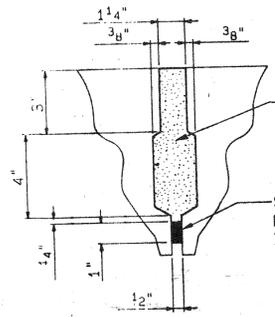
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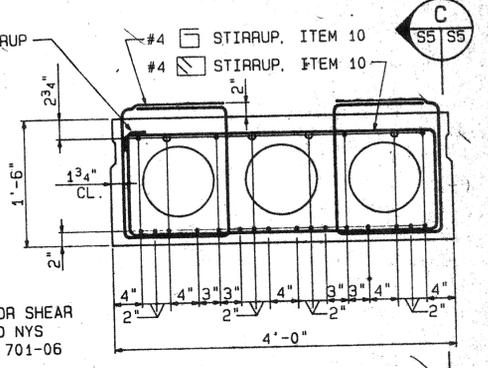
GEOMETRY

B SECTION

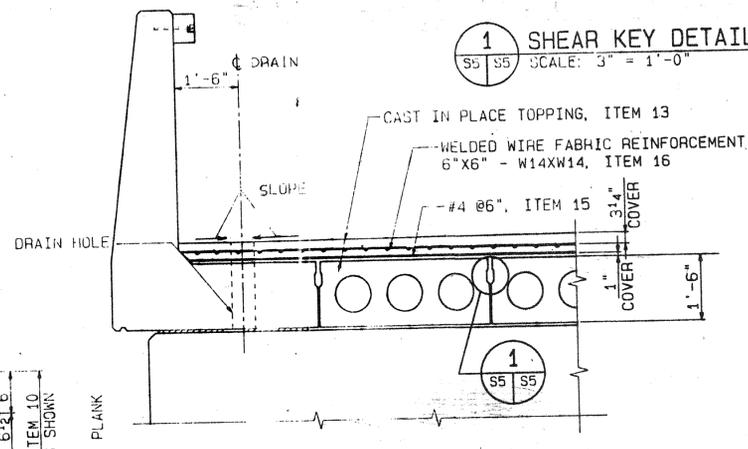
SCALE: 1" = 1'-0"



CEMENT GROUT FOR SHEAR KEYS CONFORM TO NYS MATERIAL SPEC. 701-06 ITEM 10
SEAL WITH CAULKING COMPOUND BEFORE FILLING SHEAR KEY ITEM 10



REINFORCING

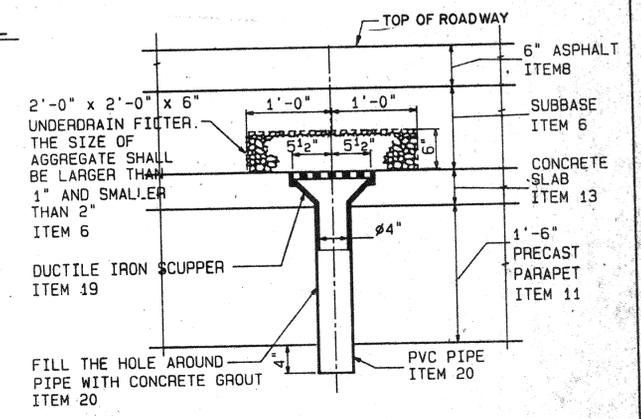


1 SHEAR KEY DETAIL

SCALE: 3" = 1'-0"

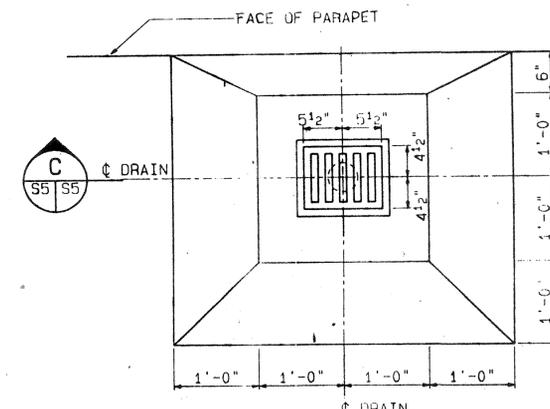
CAST IN PLACE TOPPING REINFORCING SECTION

SCALE: 1/2" = 1'-0"



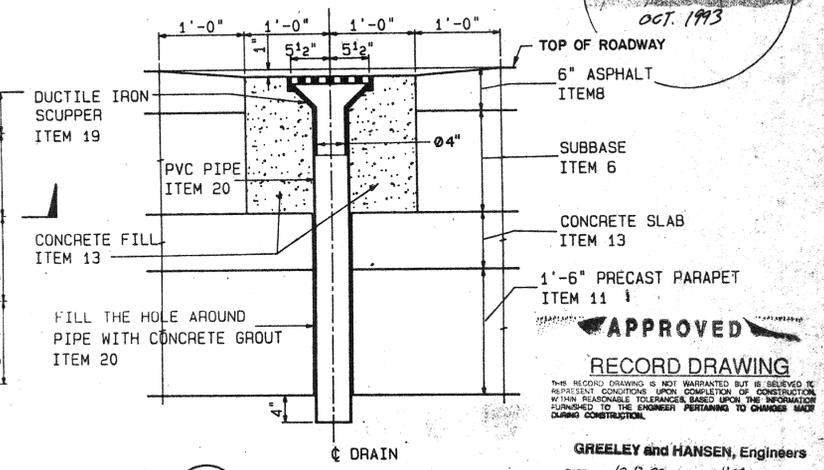
C LOWER DRAIN SECTION

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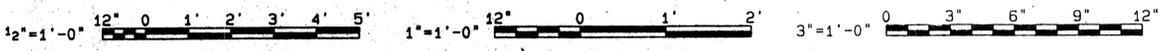
UPPER DRAIN PLAN

SCALE: 1" = 1'-0"



C UPPER DRAIN SECTION

SCALE: 1" = 1'-0"



OCT. 1993
APPROVED
RECORD DRAWING
THIS RECORD DRAWING IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

GREELEY and HANSEN, Engineers
DATE 10-13-93 BY HAN

NO.	DATE	DESCRIPTION	APPR'D.

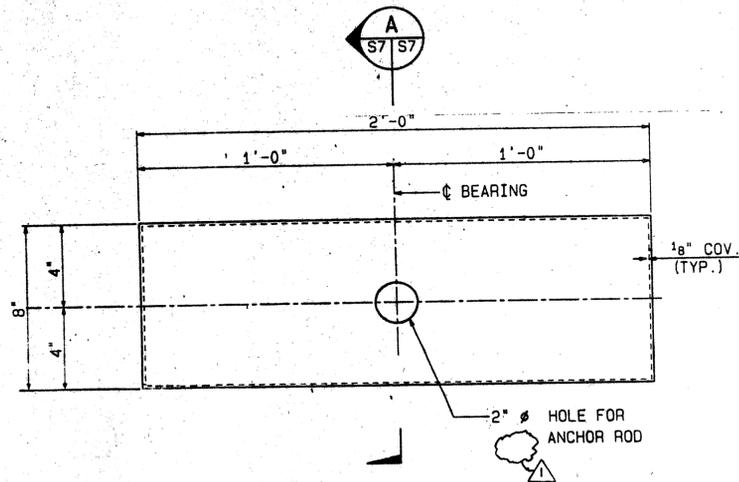
DES. BY
DR. BY
CK. BY
"AS-BUILT"
OCT 1993

PILE FOUNDATION
CONSTRUCTION CO., INC.
75-02 AMSTEL BLVD.
ARVERNE, NY 11692

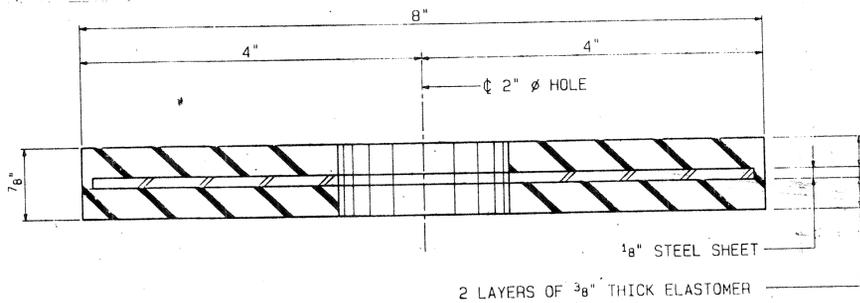
THE CITY OF NEW YORK
DEPARTMENT OF SANITATION
WASTE MANAGEMENT AND FACILITIES DEVELOPMENT

CAPITAL PROJECT S111/340
MAIN CREEK BRIDGE CROSSING
FRESH KILLS LANDFILL FACILITY
DECK DETAILS

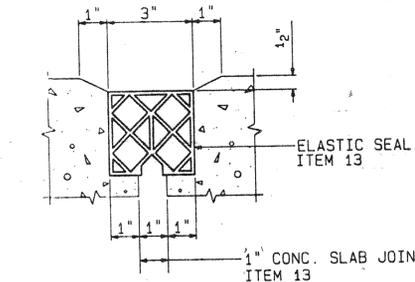
DATE MARCH 29, 1989
SHEET 13
OF 21



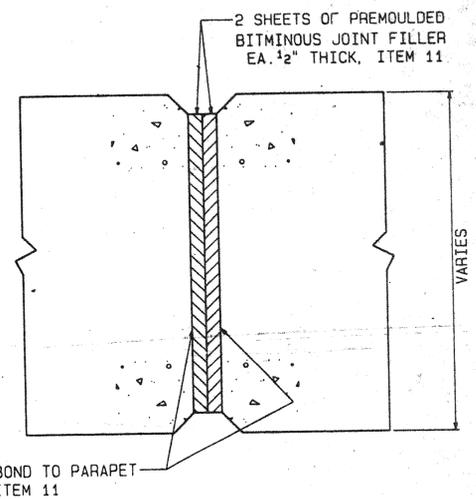
PLAN
ELASTOMERIC BEARING TYPE I, ITEM 18
SCALE: 3" = 1'-0"



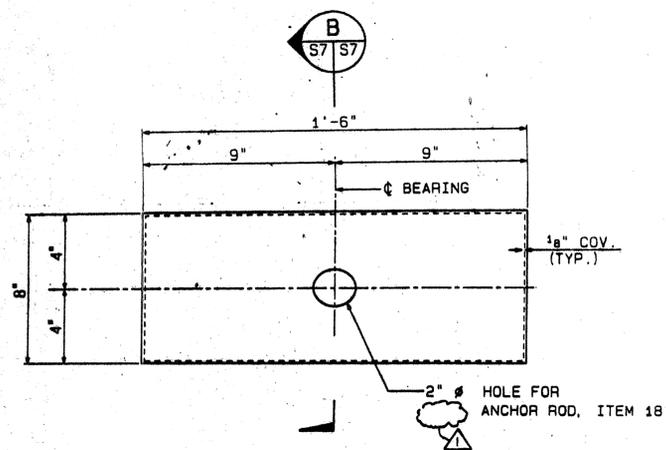
A SECTION
FULL SCALE



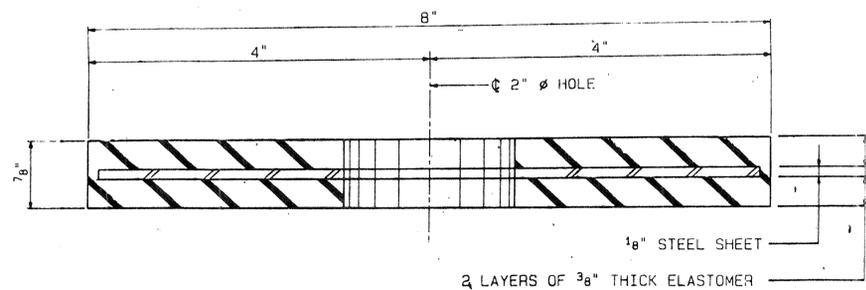
C DETAIL
SCALE 3" = 1'-0"



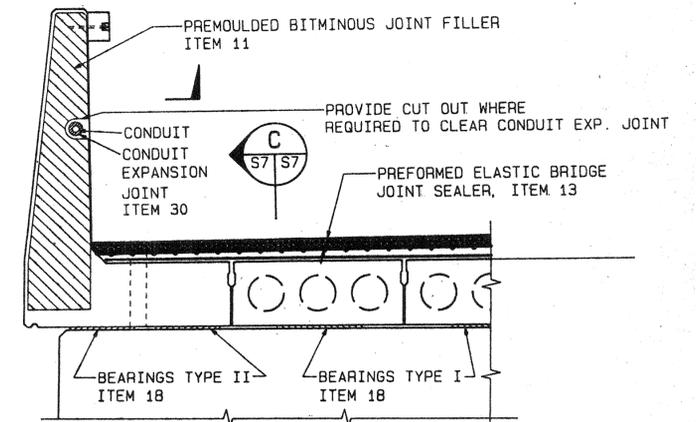
D DETAIL
SCALE 3" = 1'-0"



PLAN
ELASTOMERIC BEARING TYPE II, ITEM 18
SCALE: 3" = 1'-0"



B SECTION
FULL SCALE



SECTION AT EXPANSION JOINT
SCALE 1/2" = 1'-0"

NOTES

1. THE ELASTOMERIC BEARINGS AT EXPANSION BEARING LOCATIONS SHALL BE ATTACHED TO BOTH TOP OF MORTAR PAD AND BOTTOM OF PRESTRESSED PLANK BY AN APPROVED BONDING MATERIAL.



APPROVED
RECORD DRAWING
THIS RECORD DRAWING IS NOT WARRANTED NOR IS IT TO BE USED FOR ANY PURPOSES OTHER THAN THAT FOR WHICH IT WAS PREPARED. THE ENGINEER ASSUMES NO LIABILITY FOR ANY DAMAGE OR LOSS OF ANY KIND, INCLUDING REASONABLE TOLEANCES BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGING WORK DURING CONSTRUCTION.



NO.	DATE	DESCRIPTION	APPR'D.
1	9/22/89	REVISED ANCHOR ROD	JK
REVISIONS			

DES. BY _____
DR. BY _____
CK. BY _____
"AS-BUILT"
OCT 26 & 28, 1992

PILE FOUNDATION
CONSTRUCTION CO., INC.
75-02 AMSTEL BLVD.
ARVERNE, NY 11692

THE CITY OF NEW YORK
DEPARTMENT OF SANITATION
WASTE MANAGEMENT AND FACILITIES DEVELOPMENT

CAPITAL PROJECT S111/340
MAIN CREEK BRIDGE CROSSING
FRESH KILLS LANDFILL FACILITY

DATE MARCH 29, 1989
SHEET 15
OF 21

Appendix C

**Main Creek Bridge
NYSDOT Bridge
Inspection Forms**

RC-BIN -
 TEAM LEADER PETER MATYJEWICZ
 Signature Peter Matyjewicz
 P.E. NUMBER 069901 STATE NY
 ASST TEAM LEADER MICHAEL WILLIAMS
 RAMP BRIDGE ATTACHED TO SPAN NA BIN NA

NYS DEPT. OF TRANSPORTATION
 BRIDGE INSPECTION REPORT
 SHEET 1 OF 4

DATE MO 04 DAY 09 YEAR 08
13 14 15 16 17 18

INSPECTION AGENCY TYPE OF INSPECTION 3
19 20 21 1-BIENNIAL 3-IN DEPTH 5-SPECIAL
 2-INTERIM 4-NONE(UNDER CONTRACT)

STATE HWY. NO. _____ MILEPOINT: _____ POLIT. UNIT: _____

FEATURE(S) CARRIED: DSNY FRESH KILLS LANDFILL INTERNAL ROAD

FEATURE(S) CROSSED: MAIN CREEK

TOTAL SPANS: 21 BRIDGE ORIENTED: TAKEN AS EAST YEAR BUILT: 1993

SUPERSTRUCTURE TYPE(S): PRESTRESSED SLAB SIMPLE SPAN AADT/YR: 1

VERTICAL CLEARANCE AND LOAD POSTINGS	ON:	UNDER:	LOADING:	062 <small>118</small>
	<input type="text"/> FT <input type="text"/> IN <small>19 21</small>	<input type="text"/> FT <input type="text"/> IN <small>23 25</small>	<input type="text"/> TONS <small>27</small>	

	begin end		begin end				
<u>ABUTMENTS:</u>			<u>WINGWALLS:</u>		<u>APPROACHES:</u>		
Joint with deck	<u>8</u> <small>22</small>	<u>8</u> <small>23</small>	Walls	<u>3</u> <small>40</small>	<u>3</u> <small>41</small>	Drainage	<u>4</u> <small>53</small>
Bearings, anchor bolts, pads	<u>5</u> <small>24</small>	<u>5</u> <small>25</small>	Footings	<u>8</u> <small>42</small>	<u>8</u> <small>43</small>	Embankment	<u>8</u> <small>54</small>
Bridge seat and pedestals	<u>5</u> <small>26</small>	<u>5</u> <small>27</small>	Erosion or scour	<u>6</u> <small>44</small>	<u>5</u> <small>45</small>	Settlement	<u>4</u> <small>55</small>
Backwall	<u>9</u> <small>28</small>	<u>9</u> <small>29</small>	Piles	<u>8</u> <small>46</small>	<u>8</u> <small>47</small>	Erosion	<u>8</u> <small>56</small>
Stem (breastwall)	<u>6</u> <small>30</small>	<u>6</u> <small>31</small>	<u>STREAM CHANNEL:</u>		Pavement	<u>3</u> <small>57</small>	
Erosion or scour	<u>6</u> <small>32</small>	<u>5</u> <small>33</small>	Stream alignment	<u>6</u> <small>48</small>	Guide railing	<u>4</u> <small>58</small>	
Footings	<u>8</u> <small>34</small>	<u>8</u> <small>35</small>	Erosion and scour	<u>5</u> <small>49</small>	GENERAL RECOMMEND 5 <small>60</small>		
Piles	<u>9</u> <small>36</small>	<u>9</u> <small>37</small>	Waterway opening	<u>6</u> <small>50</small>			
Recommendation	<u>5</u> <small>38</small>	<u>5</u> <small>39</small>	Bank protection	<u>5</u> <small>51</small>			

ACCESS CATEGORY:

- FLAG ISSUED? NONE 61
 RED STRUCTURAL 62
 YELLOW STRUCTURAL 63
 SAFETY 64

BRIEF REASON

REVIEWED BY	_____
P.E. NUMBER	_____
DATE	_____

Appendix D

**Main Creek Bridge
Photos and Condition
Sketches**



Photo No.: MC01

Location: Bridge roadway, looking east from the West Approach.

Description: General configuration.



Photo No.: MC02

Location: Bridge roadway, looking west from the East Approach.

Description: General configuration.



Photo No.: MC03

Location: West Approach, looking west from the bridge.

Description: General configuration.



Photo No.: MC04

Location: East Approach, looking east from the bridge.

Description: General configuration.



Photo No.: MC05

Location: North Elevation, looking south from Main Creek.

Description: General configuration.



Photo No.: MC06

Location: South Elevation, looking north from Main Creek.

Description: General configuration.



Photo No.: MC07

Location: South elevation of bridge at low tide, from the west shore looking east.

Description: General configuration.



Photo No.: MC08

Location: Main Creek looking north from north fascia.

Description: General configuration.



Photo No.: MC09
Location: In transit
Description: Small deck barge, single scaffold level (disassembled) and aluminum runabout with outboard used for inspection of Main Creek Bridge.



Photo No.: MC10
Location: West approach near abutment
Description: Transverse grooves in pavement above or near abutment may indicate distress.



Photo No.: MC11

Location: West abutment elevation, looking from south fascia

Description: Abutment stem (pier cap) and pedestals are in good condition. Stone rip-rap on abutments slope below is in good condition.



Photo No.: MC12

Location: East abutment.

Description: Abutment stem (pier cap) and pedestals in good condition. Less than 5 ft. clearance above shoreline grade.



Photo No.: MC13

Location: Southwest wingwall elevation, looking north.

Description: Concrete wingwall is extensively broken up.



Photo No.: MC14

Location: Southwest wingwall looking north.

Description: Closer view of broken concrete wingwall. Note steel sheet piling for approach slope protection, fence and concrete traffic barrier.

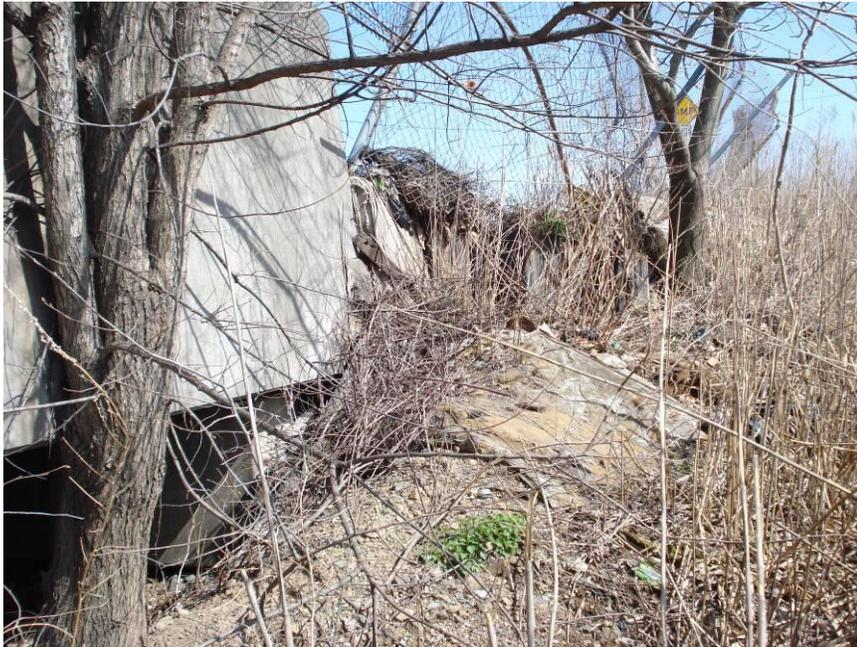


Photo No.: MC15

Location: Southeast wingwall, south fascia.

Description: Concrete wingwall is cracked and broken. Slope is stable but overgrown and covered with debris.



Photo No.: MC16

Location: Main Creek looking north towards the bridge.

Description: Bridge is located at a narrow point on the creek.



Photo No.: MC17

Location: Below bridge, north fascia looking east.

Description: High water line is clearly visible on piles. Freeboard is about 6 ft. at high water.



Photo No.: MC18

Location: West abutment and shoreline south fascia looking west.

Description: Shoreline is stabilized with stone rip-rap and gabions in good condition.



Photo No.: MC19

Location: West abutment, north fascia looking west.

Description: Shoreline is stabilized with stone rip-rap in good condition.



Photo No.: MC20

Location: East abutment and shoreline, south fascia looking east near high tide.

Description: Shoreline is stabilized by vegetation. Water reaches almost to the east abutment at high tide.



Photo No.: MC21

Location: Northeast wingwall, looking east.

Description: Embankment is stable and vegetated.



Photo No.: MC22
Location: Pile dolphin at Pier 8, south side.
Description: Dolphin in poor condition.



Photo No.: MC23
Location: Pile dolphins at Piers 6 and 5, south side.
Description: Dolphins in fair condition.



Photo No.: MC24

Location: Below Span 19 (foreground) and 20 (behind Pier 19) looking from south fascia.

Description: Debris, flotsam and earth piled up almost to the underside of the superstructure.



Photo No.: MC25

Location: West approach, north side, just behind west abutment, looking east.

Description: Settlement of roadway behind abutment causing ponding. Pavement uneven and breaking up. Barriers uneven and damaged.



Photo No.: MC26

Location: West approach, south side, just behind west abutment, looking east.

Description: Settlement of roadway behind abutment causing ponding. Pavement breaking up. Barriers damaged.



Photo No.: MC27

Location: West approach looking northeast.

Description: Manholes in poor condition. Concrete barriers in poor condition as well. Note depression near northwest corner of abutment with water ponding – see Photo MC25 above.



Photo No.: MC28

Location: East approach, south side, looking south.

Description: Settlement of roadway behind east abutment causing ponding. Barrier just behind abutment damaged. Fence in poor condition.



Photo No.: MC29

Location: East approach, north side, near east abutment, looking northeast.

Description: Roadway surface uneven. Note settlement and ponding. Barriers uneven and damaged. Fence in fair condition.



Photo No.: MC30
Location: East approach, north side just behind east abutment, looking east.
Description: Pavement in poor condition.



Photo No.: MC31
Location: East approach, south side just behind east abutment, looking east.
Description: Pavement in poor condition.

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Photo No.: MC32
Location: Span 2, south side
Description: Potholes in pavement.



Photo No.: MC33
Location: Roadway over Pier 5, looking south
Description: Pavement breakup over pier and at parapet.



Photo No.: MC34
Location: Roadway over Pier 14, south side
Description: Pavement breakup over pier.



Photo No.: MC35
Location: Bridge centerline looking east
Description: Pavement crack extends full length of bridge.



Photo No.: MC36

Location: Bridge deck looking east.

Description: Longitudinal and transverse pavement cracks.



Photo No.: MC37
Location: South side looking east from Span 3
Description: Uneven pavement and extensive ponding indicate loss of granular subbase.



Photo No.: MC38
Location: North side looking east, Span 21.
Description: Deep pavement depression and ponding indicate loss of granular subbase.



Photo No.: MC39

Location: Span 2 south side.

Description: Typical clogged scupper. Note concrete header.



Photo No.: MC40

Location: Span 1 north side.

Description: Typical partially clogged scupper.



Photo No.: MC41
Location: Span 5 north side.
Description: Scupper missing grating.



Photo No.: MC42
Location: Span 5 north side.
Description: Scupper open, but depressions on either side make scupper ineffective.



Photo No.: MC43

Location: Span 19 underside of superstructure, north side.

Description: The far downspout is from the roadway drainage scupper. The near downspout is from the underdrain scupper; note indication that the earth fill is washing out.



Photo No.: MC44

Location: Span 4 underside of superstructure, south side.

Description: Downspout has been wrapped in tape, indicating that the washing out of earth fill has been noted as a problem by maintenance forces.



Photo No.: MC45

Location: South parapet Spans 1, 2 and 3 looking southwest.

Description: Concrete is sound. Timber rub rail is missing in Spans 1 and 3 and badly deteriorated in Span 2. Fence in fair condition but missing 10 ft. section at beginning of Span 1.



Photo No.: MC46

Location: South parapet Spans 4, 5 and 6 looking southwest.

Description: Concrete is sound. Timber rub rail is missing in Spans 5 and 6 and badly deteriorated in Span 2. Fence in fair condition with bent posts and missing top extensions in Span 4.



Photo No.: MC47

Location: South parapet Spans 7, 8 and 9 looking southwest.

Description: Concrete is sound. Timber rub rail is missing in Span 7 and badly deteriorated in Spans 8 and 9. Fence badly damaged in Span 9.



Photo No.: MC48

Location: South parapet Spans 9, 10, 11 and 12 looking southwest.

Description: Concrete is sound. Timber rub rail is intact but deteriorated. Fence in fair condition in Spans 10 and 11. Note that chain link mesh has been replaced with a light wire mesh in Span 12.



Photo No.: MC49

Location: South parapet Spans 13, 14 and 15 looking southwest.

Description: Concrete is sound. Timber rub rail is missing. Fence in poor condition with missing horizontal rails.



Photo No.: MC50

Location: South parapet Spans 16, 17, and 18 looking southwest.

Description: Concrete is sound. Timber rub rail is missing in Spans 16 and 17 and badly deteriorated in Span 17. Fence in poor condition with missing and bent posts and missing horizontal rails.



Photo No.: MC51

Location: South parapet Spans 19, 20 and 21 looking southwest.

Description: Concrete is sound. Timber rub rail is missing. Fence in poor condition with bent and missing posts and missing horizontal rails.



Photo No.: MC52

Location: North parapet Spans 1, 2, and 3 looking northwest.

Description: Concrete is sound. Timber rub rail is missing in Span 2 and badly deteriorated in Spans 1 and 3. Fence is missing, with some posts still remaining.



Photo No.: MC53

Location: South parapet Spans 19, 20 and 21 looking southwest.

Description: .Concrete is sound. Timber rub rail is missing. Fence in poor condition.



Photo No.: MC54

Location: North parapet Spans 1, 2, and 3 looking northwest.

Description: Concrete is sound. Timber rub rail is missing in Span 2 and badly deteriorated in Spans 1 and 3. Fence chain link mesh and horizontal rails are missing; some posts remain.



Photo No.: MC55

Location: North parapet Spans 4, 5 and 6 looking southwest.

Description: Concrete is sound. Timber rub rail is deteriorated. Fence chain link mesh and most horizontal rails are missing; posts remain.



Photo No.: MC56

Location: North parapet Spans 7, 8, and 9 looking northwest.

Description: Concrete is sound. Timber rub rail is deteriorated. Fence chain link mesh and top horizontal rails are missing; posts remain.



Photo No.: MC57

Location: North parapet Spans 10, 11 and 12 looking southwest.

Description: Concrete is sound. Timber rub rail is deteriorated. Fence chain link mesh and top horizontal rails are missing; posts remain.



Photo No.: MC58

Location: North parapet Spans 13, 14, and 15 looking northwest.

Description: Concrete is sound. Timber rub rail is deteriorated. Fence chain link mesh missing in Spans 13, 14 and part of 15; top extension missing.



Photo No.: MC59

Location: North parapet Spans 16, 17 and 18 looking southwest.

Description: Concrete is sound. Timber rub rail is deteriorated. Fence in fair condition.



Photo No.: MC60

Location: North parapet Spans 19, 20, and 21 looking northwest.

Description: Concrete is sound. Timber rub rail is badly deteriorated. Fence in fair condition.



Photo No.: MC61
Location: Pier 65 north fascia.
Description: Bituminous joint filler between adjacent parapet sections working out. Note water stains on end face of cap beam.



Photo No.: MC62
Location: Pier 5 north fascia.
Description: Bituminous filler between spans has worked out, allowing vegetation to grow out of the earth fill.



Photo No.: MC63

Location: Span 19 underside of superstructure looking south.

Description: General view. Undersides of prestressed slabs are in good condition. Note staining from debris contacting the underside at high water.



Photo No.: MC64

Location: Span 6 underside of superstructure.

Description: Undersides of prestressed slabs are in good condition. Note small damaged area on Slab 6, likely caused in handling during construction. Damage is inconsequential.



Photo No.: MC65
Location: Span 11 underside of superstructure between Slabs 12 and 13.
Description: Foam filler rods working out . Gap is larger than typical.



Photo No.: MC66
Location: Pier 5, east face at Slabs 11 and 12.
Description: Active water leakage, either through the deck joints or cracks in the deck.



Photo No.: MC67

Location: Pier 9, west face.

Description: .Extensive active water leakage is typical for many piers. Note sub-cap beams. Two piles were driven out-of-plumb, which was corrected by adding the sub-cap beams.



Photo No.: MC68

Location: Pier 7, north fascia.

Description: Active water leakage may be through deck joint, between parapet sections or through deck cracks. Typical for many locations.



Photo No.: MC69

Location: Pier 4 Slab 6.

Description: Typical elastomeric bearing pad in good condition.



Photo No.: MC70

Location: P11, Slab 2.

Description: Bearing pad is slightly damaged, probably during construction. Bearing is still functioning as designed.



Photo No.: MC71

Location: Pier 6 east face, Slab 1, south fascia.

Description: Portion of an elastomeric bearing pad is projecting out. It could not be determined if the bearing pad has torn and moved, or if this was used as a shim of some kind during construction.



Photo No.: MC72

Location: Pier 5.

Description: Typical pedestals, generally in good condition.



Photo No.: MC73

Location: Pier 4, Slab 4

Description: Close view of pedestal. Typical. Concrete is sound. Bearing is in good condition.



Photo No.: MC74

Location: Pier 12, west face, Slabs 1 and 2

Description: Typical small spall in pedestal. Bearing is not undermined. Condition is minor.



Photo No.: MC75

Location: Pier 13, east face, Slab 3.

Description: Pedestal concrete is soft and crumbling.



Photo No.: MC76

Location: Same as MC75.

Description: Soft pedestal concrete removed with a chipping hammer down to sound concrete. The bearing is not undermined, and is in good condition.



Photo No.: MC77

Location: Pier 5.

Description: Grout from bearing installation overflowed onto pedestal and face of pier cap. Condition is unsightly but inconsequential.



Photo No.: MC78

Location: Pier 12, west face, slabs 1 and 2.

Description: Typical small spall in pedestals. Bearing is not undermined. Condition prevents visual inspection of bearings and pedestals.



Photo No.: MC79

Location: Pier 11, east face, slabs 5 and 6.

Description: Small accumulation of dirt and debris on top of cap beam. Pedestals and bearings in good condition.



Photo No.: MC80

Location: Pier 18, west face.

Description: Pier caps generally in good condition with only minor cracks and wetness. Typical. Note lumber used in forming pedestals has been left in place.



Photo No.: MC81

Location: Pier 4, southeast corner of cap beam.

Description: Small spall in cap beam and pedestal, probably caused during construction. Bearing is not undermined. Note wetness.



Photo No.: MC82

Location: Pier 5, northwest corner of cap beam.

Description: Small spall, no exposed rebar, probably caused during construction. Bearing is not undermined. Note wetness.



Photo No.: MC83

Location: Pier 6, southeast corner of cap beam.

Description: Large spall in cap beam and pedestal, probably due to water intrusion and corrosion of the rebar. Bearing is not undermined.



Photo No.: MC84

Location: Pier 12, southeast corner of cap beam.

Description: Large spall, probably due to intrusion of water and corrosion of rebar. Bearing is not undermined. Note wetness.



Photo No.: MC85
Location: Pier 4, typical pile.
Description: Good condition with some tight cracks.



Photo No.: MC86
Location: Pier 4, typical pile.
Description: Good condition with some tight map cracking.



Photo No.: MC87

Location: Pier 5.

Description: Note construction joints where piers were extended. Typical. Joints are grouted tight with no evidence of deterioration.



Photo No.: MC88

Location: Span 10, north elevation.

Description: Note sub-cap beams introduced during construction because two piles for Pier 9 were driven too far out-of-plumb to mate with the Pier 9 cap beam.



Photo No.: MC89

Location: Pier 9 cap beam, north end, west face.

Description: Note reinforcing rods added through piles. Pockets not grouted at two rods. All other pockets grouted.



Photo No.: MC90

Location: North fascia, looking west.

Description: Two insulated utility lines supported on galvanized steel brackets cantilevering from the north parapet. The third utility line is below the outboard steel beam. Note the lighting standards.



Photo No.: MC91

Location: North fascia, looking west.

Description: Third utility line is hung below the outboard steel beam.



Photo No.: MC92

Location: North fascia, looking east.

Description: Steel supports framed into parapet.



Photo No.: MC93

Location: East approach just north of the bridge, looking south.

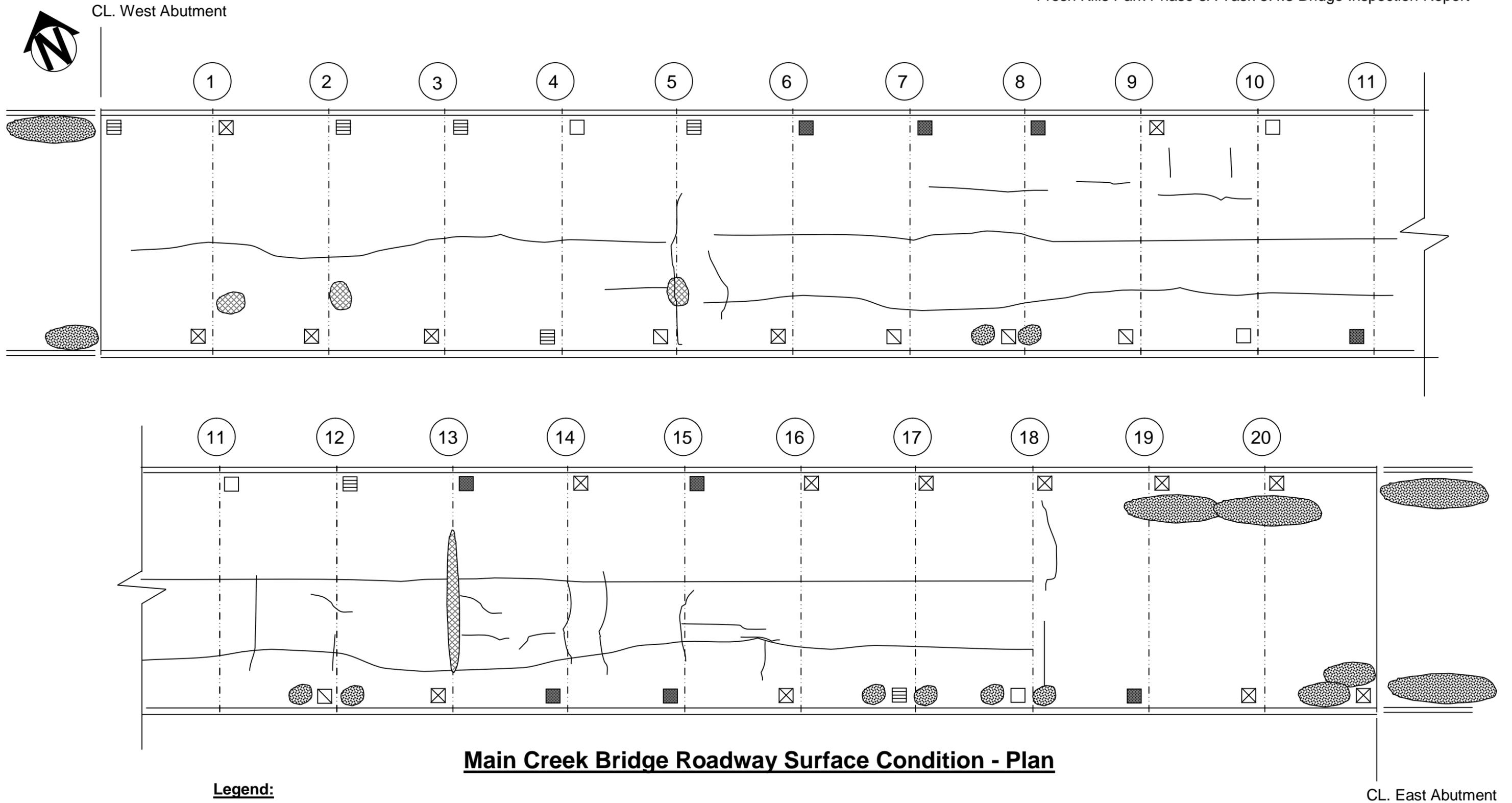
Description: Two utility lines turn down and continue underground.



Photo No.: MC94

Location: Span 1, north parapet, looking west.

Description: Two utilities turn down and continue underground.



Main Creek Bridge Roadway Surface Condition - Plan

Legend:

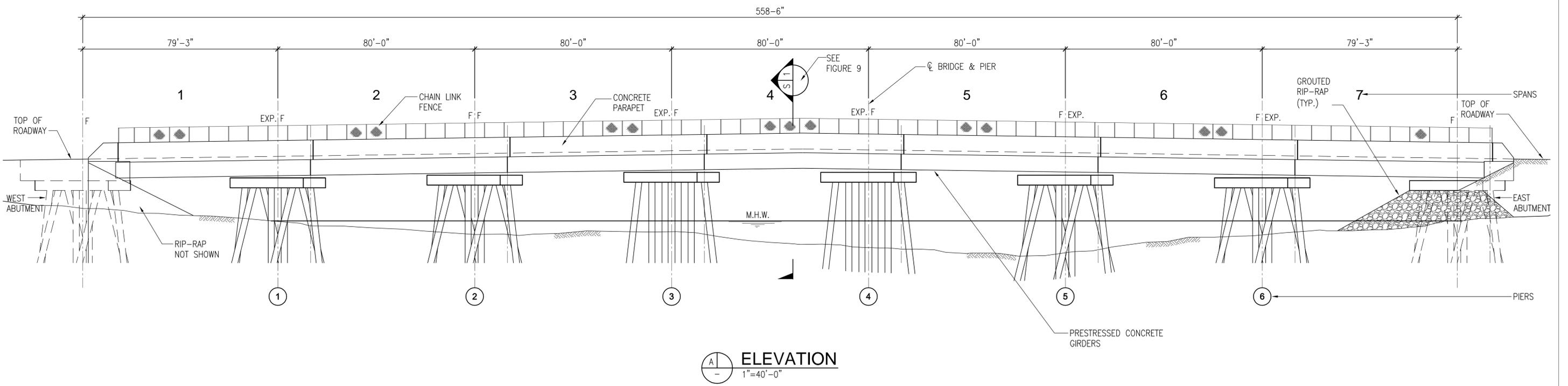
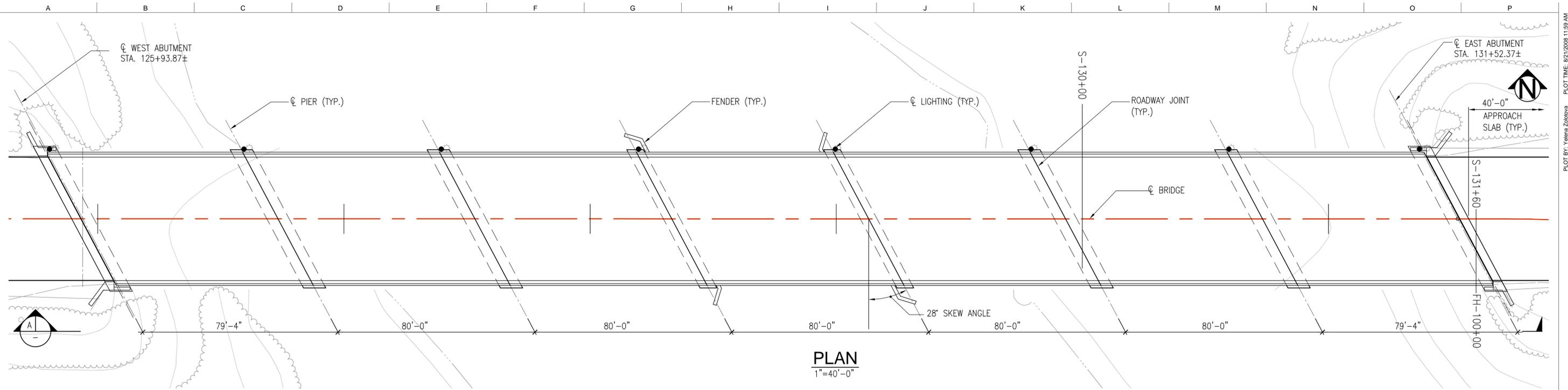
- Scupper clear
- Scupper partially clogged
- Scupper completely clogged
- Scupper grating missing
- Scupper grating missing and clogged

- Crack in asphalt wearing surface
- Pothole
- Surface depression with water ponding

Pier

Appendix E

**Richmond Creek Bridge
Drawings**



Client
NEW YORK CITY
DEPARTMENT OF PARKS
AND RECREATION

Job Title
FRESH KILLS PARK

ARUP

155 Avenue of the Americas
New York NY 10013
Tel (212) 229 2669 Fax (212) 229 1056
www.arup.com

Key Plan

Drawing Title
FIGURE 8
RICHMOND CREEK BRIDGE
PLAN AND ELEVATION

Scale
1"=40'-0"

File Name
RC - EXISTING CONDITIONS-1.DWG

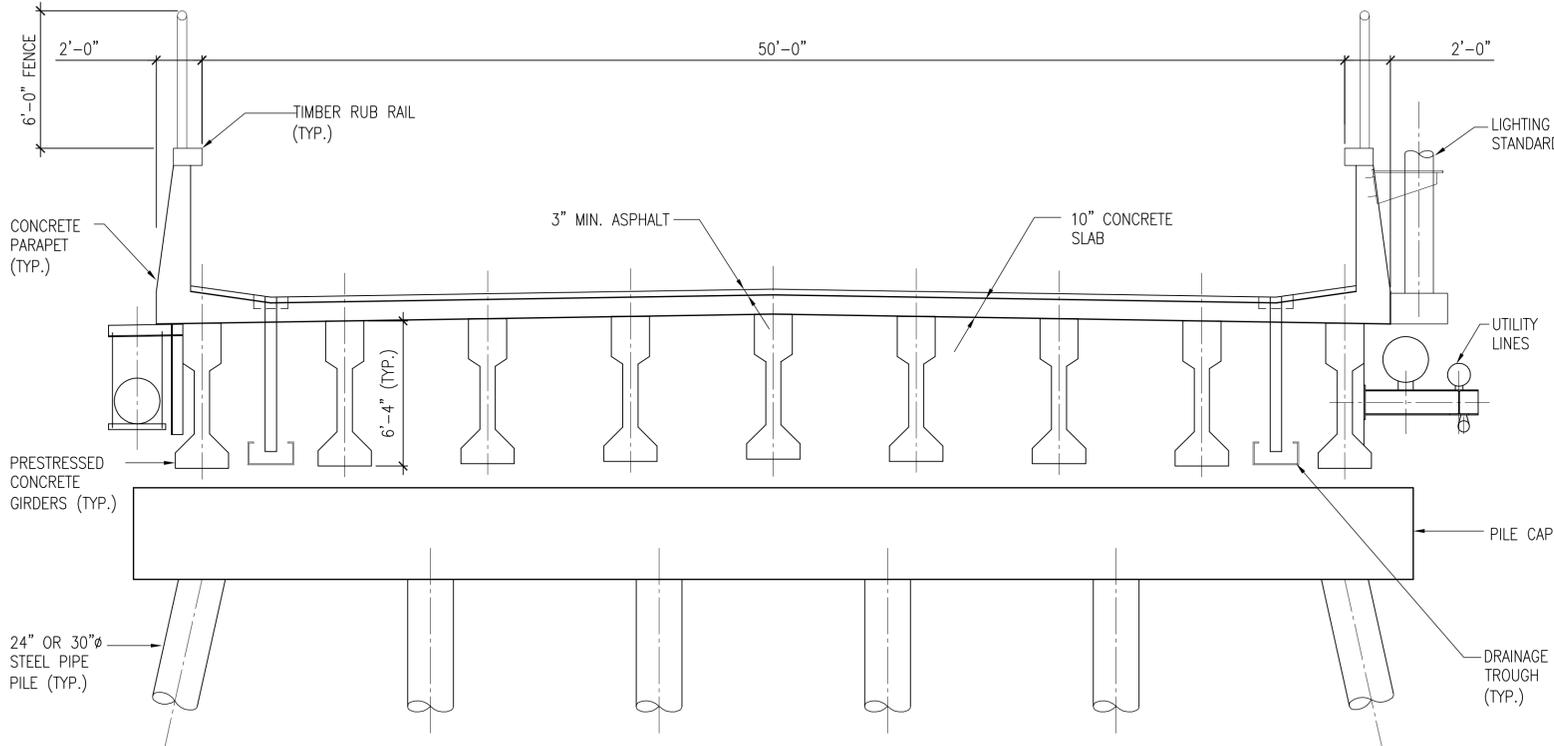
Drawing Status
BRIDGE INSPECTION REPORT

Page E1

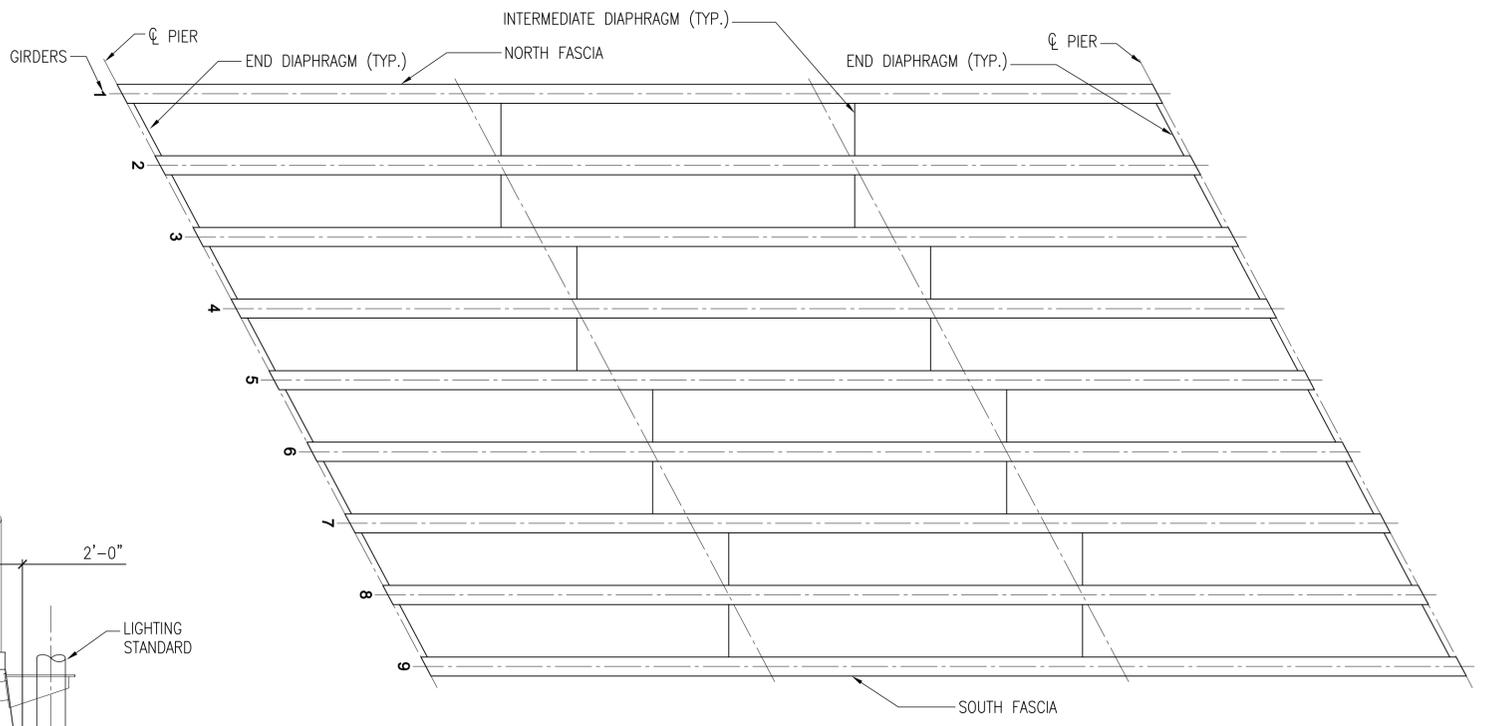
Job No 131730-00	Drawing No	Issue
----------------------------	------------	-------

Issue	Date	By	Chkd	Appd

1
2
3
4
5
6
7
8
9



S 1 SECTION
 1/8"=1'-0"
 SEE FIGURE 8



TYPICAL SPAN - PLAN OF PRESTRESSED CONCRETE GIRDERS
 1/16"=1'-0"

PLOT BY: Yelena Zubova PLOT TIME: 8/21/2008 12:01 PM

Client
 NEW YORK CITY
 DEPARTMENT OF PARKS
 AND RECREATION

Job Title
 FRESH KILLS PARK

ARUP

155 Avenue of the Americas
 New York NY 10013
 Tel (212) 229 2699 Fax (212) 229 1056
 www.arup.com

Key Plan

Drawing Title
FIGURE 9
 RICHMOND CREEK BRIDGE
 SECTION AND
 FRAMING PLAN

Scale
 1/8"=1'-0"

File Name
 RC - EXISTING CONDITIONS-2.DWG

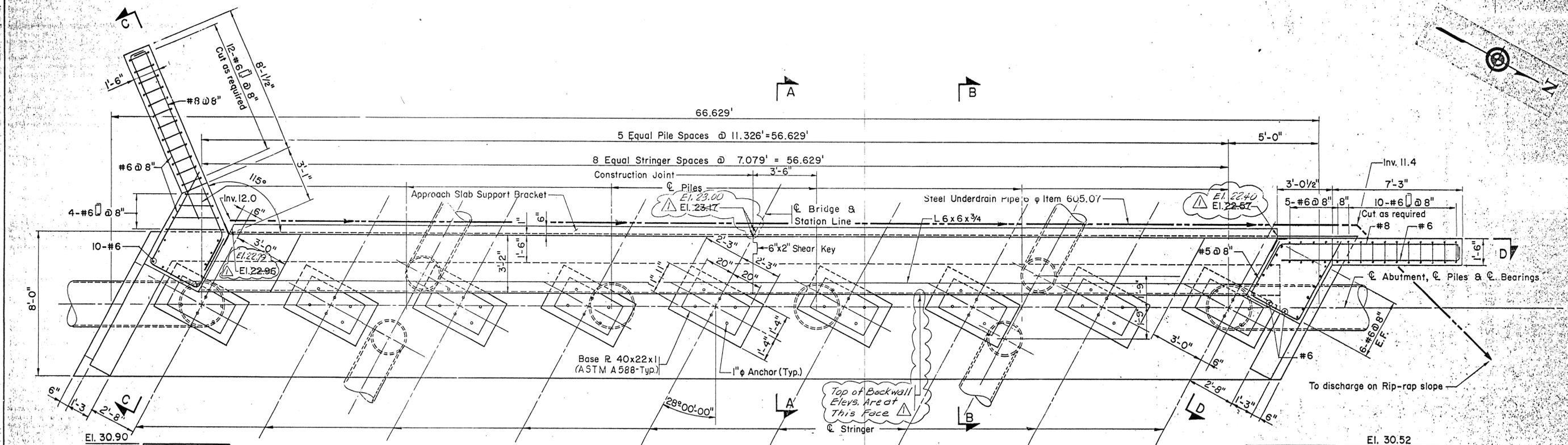
Drawing Status
BRIDGE INSPECTION REPORT

Job No
131730-00

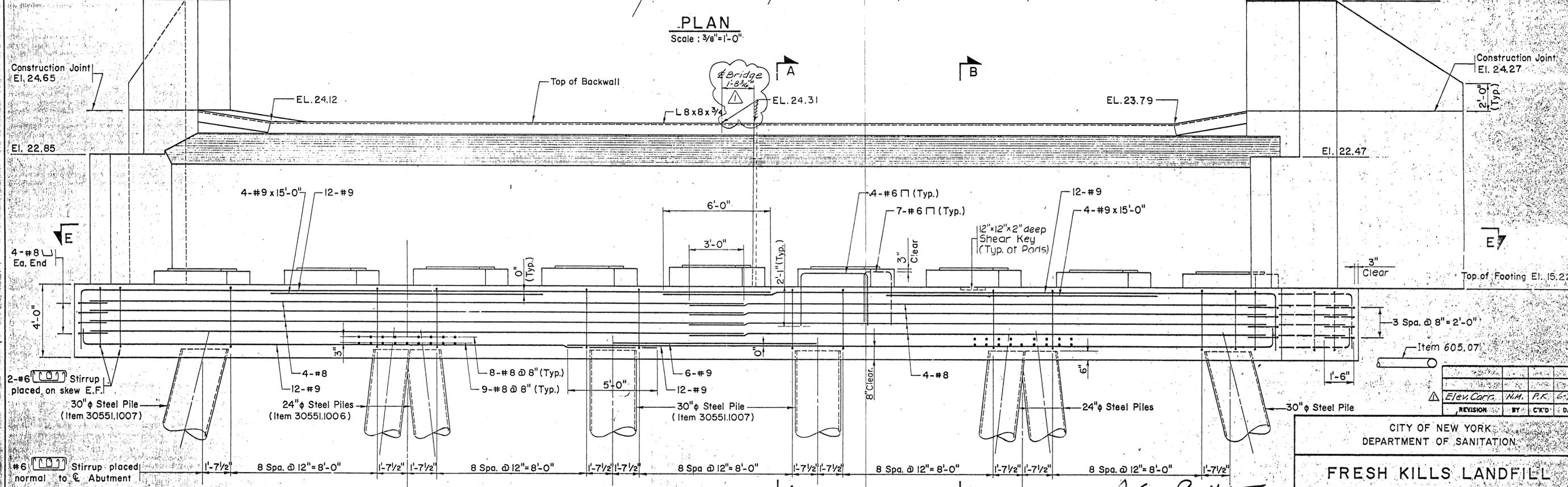
Drawing No
 Issue

Issue	Date	By	Chkd	Appd

Page E2



PLAN
Scale: 3/8"=1'-0"



ELEVATION
Scale: 3/8"=1'-0"

- NOTES:**
- WEST ABUTMENT SHOWN. EAST ABUTMENT OPPOSITE HAND.
 - FOR ADDITIONAL NOTES SEE DWG. NO. S-4.
 - FOR SECTIONS AND DETAILS SEE DWG. NO. S-8.
 - FOR TOP OF BASE PLATE ELEVATIONS SEE DWG. NO. S-12.
 - FOR ADDITIONAL PILE DETAILS SEE DWG. NO. S-6.

AS-BUILT



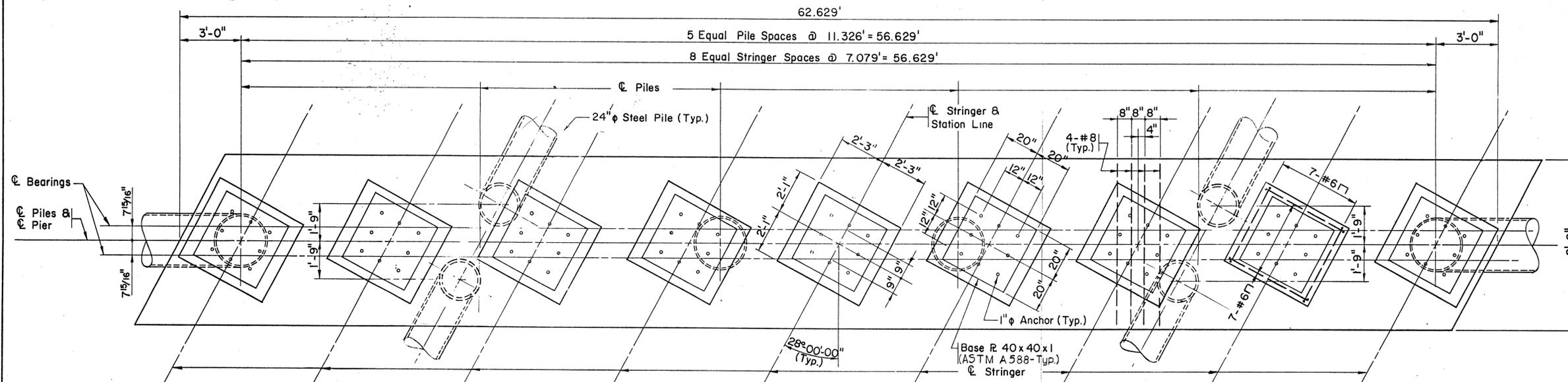
REVISION	BY	CHK'D	DATE
1	Elev. Corr.	N.M.	P.K. 6-7-88

CITY OF NEW YORK
DEPARTMENT OF SANITATION

**FRESH KILLS LANDFILL
RICHMOND CREEK BRIDGE
WEST ABUTMENT - PLAN & ELEVATION**

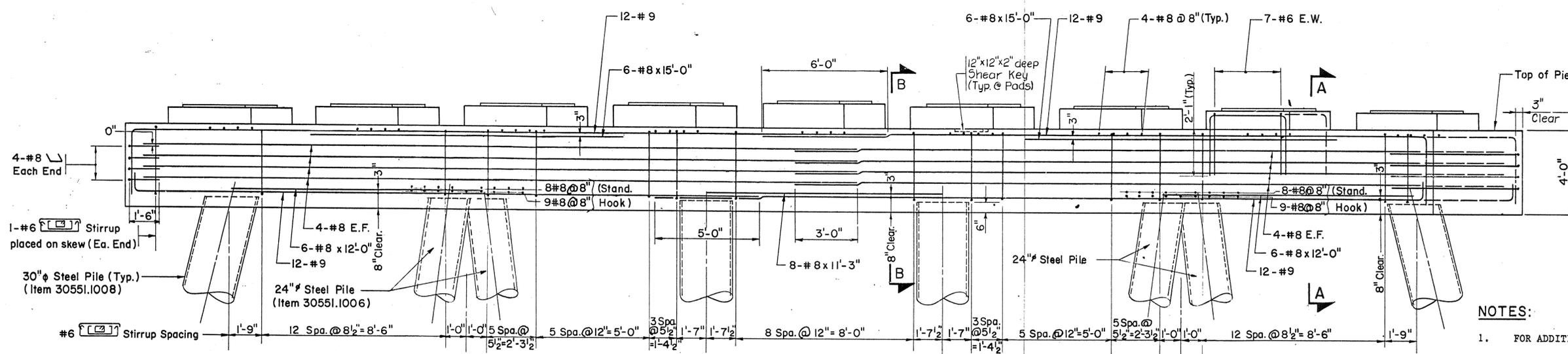
DES. BY: R.D.W.K.	URS COMPANY, INC.	SCALE: 3/8"=1'-0"
DWN. BY: M.J.B.	370 SEVENTH AVENUE	DATE: 10-1-87
CHK. BY: K.C.	NEW YORK, NEW YORK 10007	DWG. NO. S-7
APVD BY: N.M.		

Figure 10
Page E3



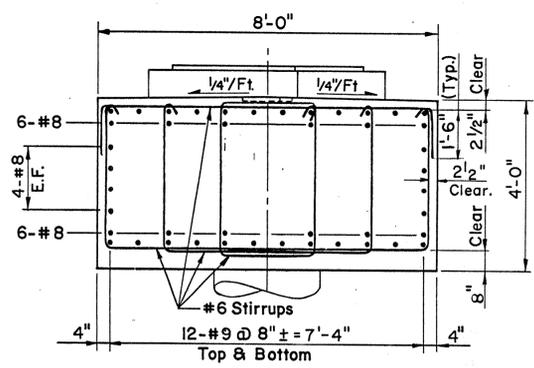
PLAN
Scale: 3/8" = 1'-0"

- LEGEND**
- P#1 = PIER NO. 1
 - P#2 = PIER NO. 2
 - P#5 = PIER NO. 5
 - P#6 = PIER NO. 6

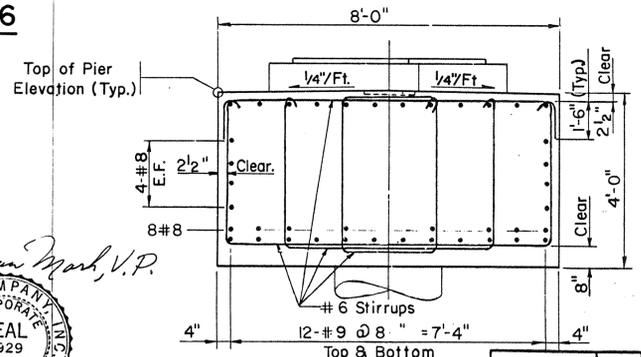


ELEVATION - PIERS #1, #2, #5 & #6
Scale: 3/8" = 1'-0"

- NOTES:**
1. FOR ADDITIONAL NOTES SEE DWG. NO. S-4.
 2. FOR BEARING DETAILS SEE DWG. NO. S-12.
 3. FOR TOP OF BASE PLATE ELEV. SEE DWG. NO. S-12.
 4. FOR ADDITIONAL BASE PLATE DETAILS SEE DWG. NO. S-12.
 5. FOR PILE CONNECTION DETAILS SEE DWG. NO. S-6.



SECTION A-A
Scale: 1/2" = 1'-0"



SECTION B-B
Scale: 1/2" = 1'-0"

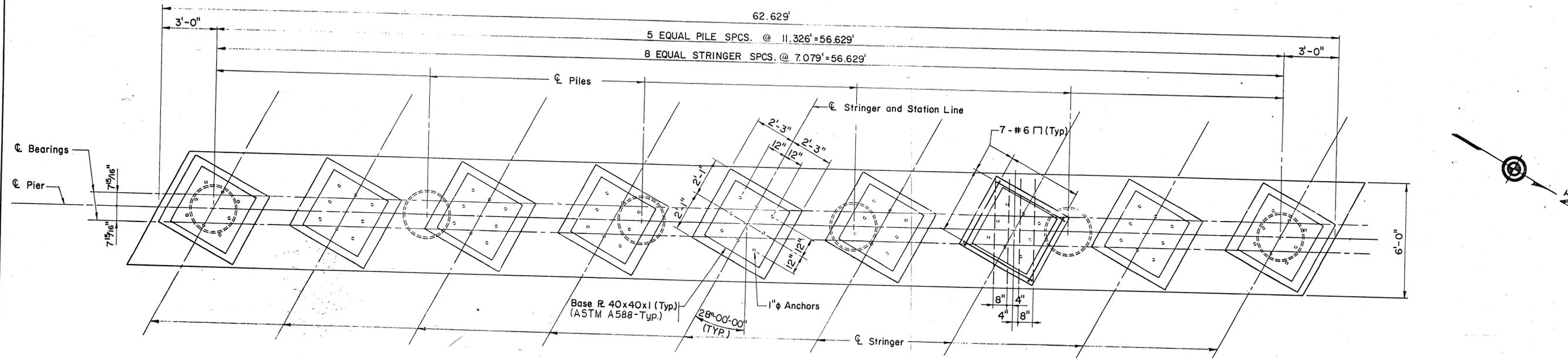
AS-BUILT

CITY OF NEW YORK
DEPARTMENT OF SANITATION

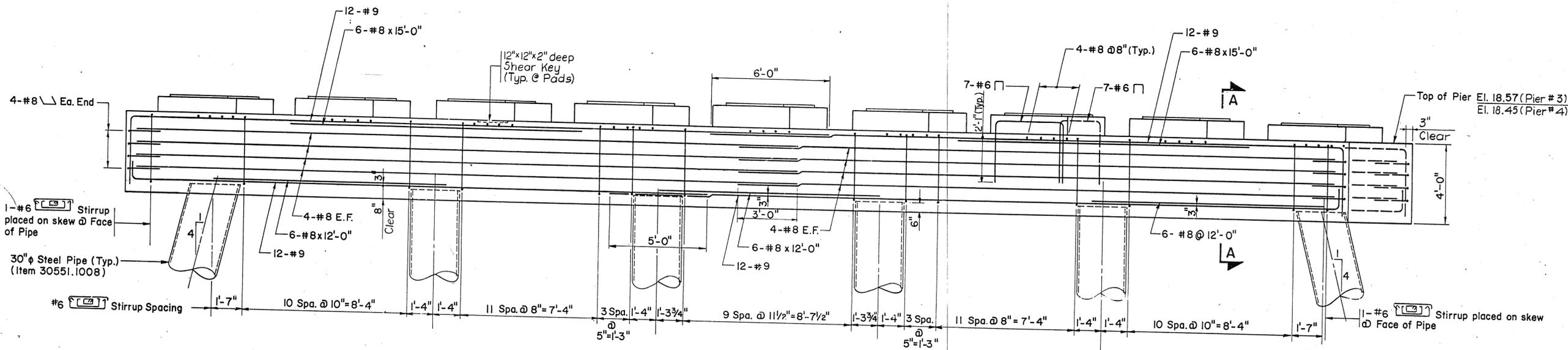
**FRESH KILLS LANDFILL
RICHMOND CREEK BRIDGE
PIERS NOS. 1, 2, 5, 6 - PLAN AND ELEVATION**



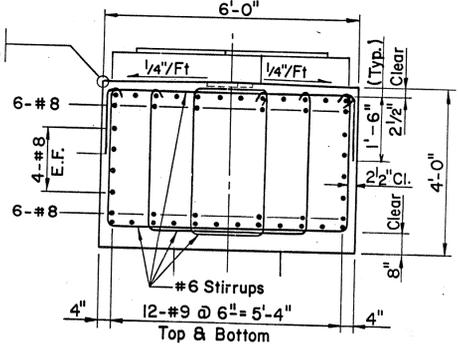
DESIGN BY: W.K.R.D.	URS COMPANY, INC.	SCALE: AS NOTED
DRAWN BY: M.J.B.	370 SEVENTH AVENUE	DATE: 10-1-87
CHECKED BY: K.C.	NEW YORK, NEW YORK 10001	DWG. NO. S-9
APPROVED BY: N.M.		
REVISION	BY	C'D
		DATE



PLAN
SCALE: 3/8"=1'-0"



ELEVATION - PIERS #3 & #4
SCALE: 3/8"=1'-0"



SECTION A-A
SCALE: 1/2"=1'-0"

NOTES:

1. FOR ADDITIONAL NOTES SEE DWG. NO. S-4.
2. FOR BEARING DETAILS SEE DWG. NO. S-12.
3. FOR TOP OF BASE PLATE ELEVS. SEE DWG. NO. S-12.
4. FOR ADDITIONAL BASE PLATE DETAILS SEE DWG. NO. S-12.
5. FOR PILE CONNECTION DETAILS SEE DWG. NO. S-6.

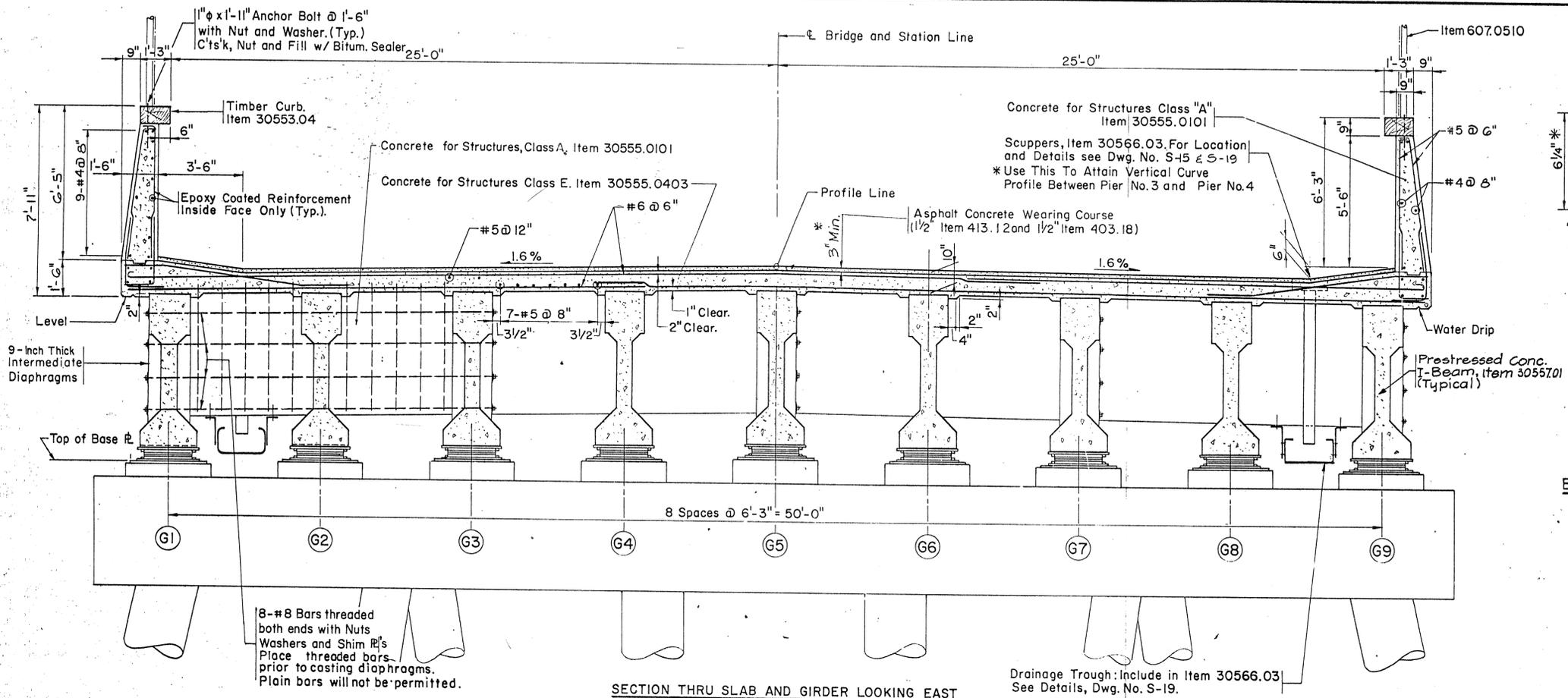


AS-BUILT

CITY OF NEW YORK
DEPARTMENT OF SANITATION

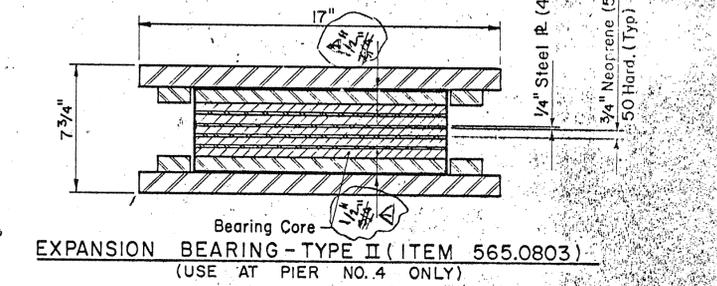
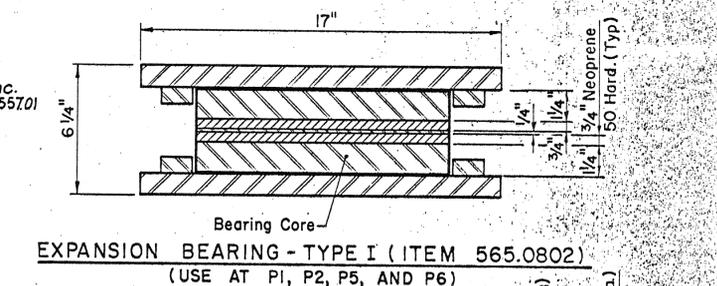
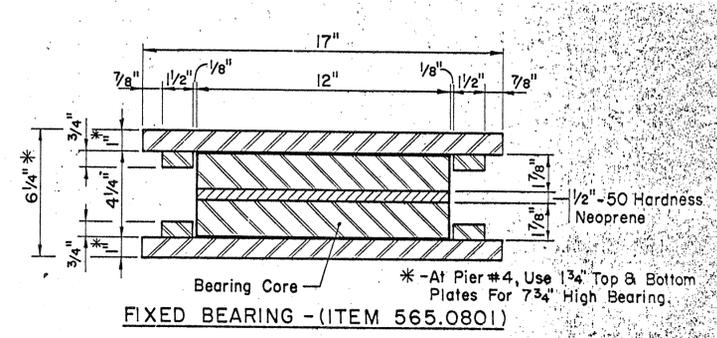
FRESH KILLS LANDFILL
RICHMOND CREEK BRIDGE
PIERS NOS. 3,4 - PLAN AND ELEVATION

DES. BY: W.K.R.D.	SCALE AS NOTED
DWN. BY: M.J.B.	DATE 10-1-87
CHKD. BY: K.C.W.K.	DWG. NO. S-10
APVD BY: N.M.	



SECTION THRU SLAB AND GIRDER LOOKING EAST

SECTION A-A
Scale: 3/8" = 1'-0"

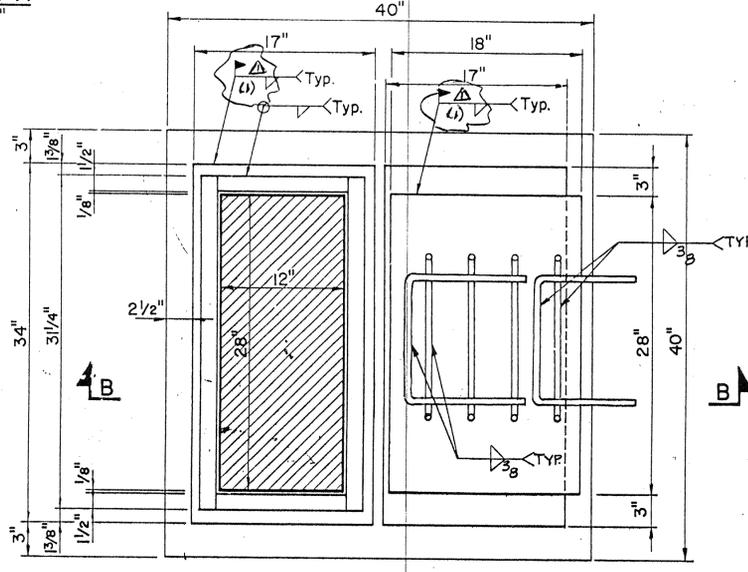


BEARING DETAILS
Scale: 3" = 1'-0"

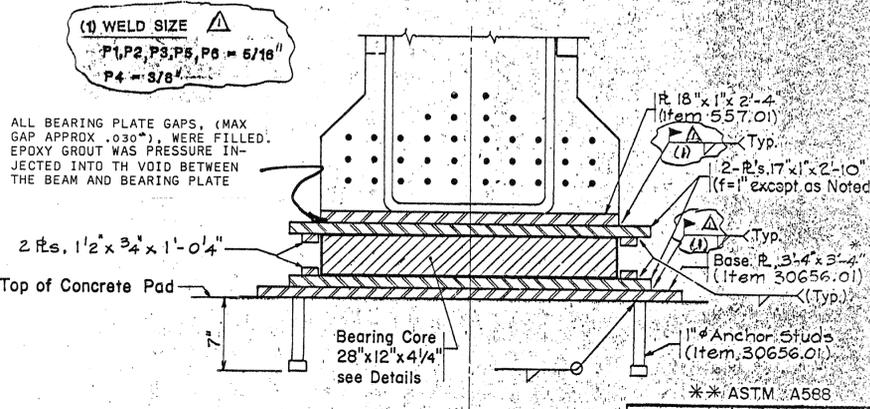
TABLE I

LOCATION	TOP OF BASE PLATE ON CONCRETE PEDESTAL									TOP OF PIER
	G1	G2	G3	G4	G5	G6	G7	G8	G9	
W. ABUT.	15.80	15.94	16.09	16.24	16.38	16.33	16.28	16.22	16.17	15.22
P #1	16.91	17.05	17.20	17.35	17.49	17.44	17.39	17.33	17.28	16.33
P #2	18.03	18.17	18.32	18.47	18.61	18.56	18.51	18.45	18.40	17.45
P #3	19.15	19.29	19.44	19.58	19.73	19.63	19.53	19.43	19.33	18.57
P #4	19.20	19.30	19.40	19.50	19.60	19.45	19.31	19.16	19.02	18.45
P #5	18.40	18.45	18.51	18.56	18.61	18.47	18.32	18.17	18.03	17.45
P #6	17.28	17.33	17.39	17.44	17.49	17.35	17.20	17.05	16.91	16.33
E. ABUT.	16.17	16.22	16.28	16.33	16.38	16.24	16.09	15.94	15.80	15.22

P = PIER



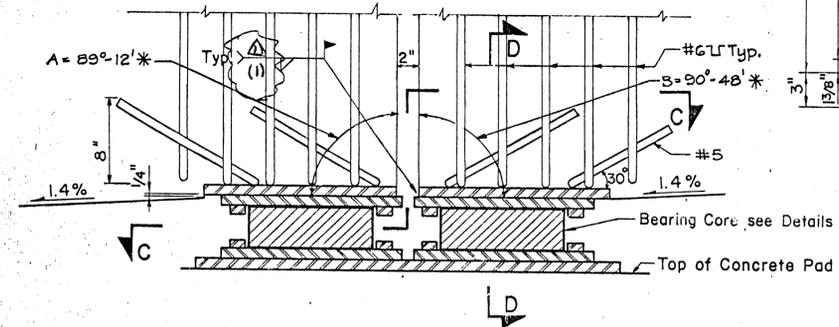
SECTION C-C
Scale: 1/2" = 1'-0"



AS-BUILT

SECTION D-D
Scale: 1/2" = 1'-0"

NOTE:
At Bearing Line P3F & P4E
Angle A = B = 90°-00'



SECTION B-B
Scale: 1/2" = 1'-0"

BEARING DETAILS

- NOTES:
- FOR ADDITIONAL NOTES SEE DWG. NO. S-4.
 - FOR LOCATION OF SECTION A-A, SEE DWG. NO. S-15.
 - FOR DETAILS OF PRESTRESSED CONCRETE I-BEAMS SEE DWGS. NOS. S-13 AND S-14.
 - FOR ADDITIONAL DETAILS OF DECK SLAB SEE DWG. NO. S-15.
 - FOR INTERMEDIATE AND END DIAPHRAGM DETAILS, SEE DWG. NO. S-14.
 - FOR LOCATION OF FIXED AND EXPANSION BEARINGS, SEE "SOUTH ELEVATION," DWG. NO. S-3.
 - TOP REINFORCING BARS IN STRUCTURAL SLABS SHALL BE EPOXY-COATED.



CITY OF NEW YORK
DEPARTMENT OF SANITATION

FRESH KILLS LANDFILL
RICHMOND CREEK BRIDGE
TYPICAL TRANSVERSE SECTION
AND BEARING DETAILS

DESIGN BY: C.E.	URS COMPANY, INC.	SCALE: AS NOTED
DRAWN BY: M.J.B.	370 SEVENTH AVENUE	DATE: 10-1-87
CHECKED BY: R.K.C.E.	NEW YORK, NEW YORK 10007	DWG. NO. S-12
APPROVED BY: N.M.		

Appendix F

**Richmond Creek Bridge
NYSDOT Inspection
Forms**

RC-BIN -
 TEAM LEADER PETER MARIBENI, P.E.
Signature [Signature]
 P.E. NUMBER 069901 STATE NY
 ASST TEAM LEADER MICHAEL WILLIAMS
 RAMP BRIDGE ATTACHED TO SPAN NA BIN NA

NYS DEPT. OF TRANSPORTATION
 BRIDGE INSPECTION REPORT
 SHEET ___ OF ___

DATE MO DAY YEAR

 13 14 15 16 17 18

INSPECTION AGENCY TYPE OF INSPECTION 1-BIENNIAL 3-IN DEPTH 5-SPECIAL
 2-INTERIM 4-NONE(UNDER CONTRACT)

STATE HWY. NO. _____ MILEPOINT: _____ POLIT. UNIT: _____
 FEATURE(S) CARRIED: DS NY PRESST KINS LANDFILL INTERNAL ROAD
 FEATURE(S) CROSSED: ~~ROCK CREEK~~ RICHMOND CREEK
 TOTAL SPANS: 7 BRIDGE ORIENTED: TAKEN AS EAST YEAR BUILT: 1989
 SUPERSTRUCTURE TYPE(S): PRESSTRESS CONCRETE GIRDER AADT/YR: _____

VERTICAL CLEARANCE AND LOAD POSTINGS ON: FT IN UNDER: FT IN LOADING: TONS

ABUTMENTS:	begin	end	WINGWALLS:	begin	end	APPROACHES:
Joint with deck	<input type="text"/>	<input type="text"/>	Walls	<input type="text"/>	<input type="text"/>	Drainage
Bearings, anchor bolts, pads	<input type="text"/>	<input type="text"/>	Footings	<input type="text"/>	<input type="text"/>	Embankment
Bridge seat and pedestals	<input type="text"/>	<input type="text"/>	Erosion or scour	<input type="text"/>	<input type="text"/>	Settlement
Backwall	<input type="text"/>	<input type="text"/>	Piles	<input type="text"/>	<input type="text"/>	Erosion
Stem (breastwall)	<input type="text"/>	<input type="text"/>	STREAM CHANNEL:		Pavement	
Erosion or scour	<input type="text"/>	<input type="text"/>	Stream alignment	<input type="text"/>	Guide railing	
Footings	<input type="text"/>	<input type="text"/>	Erosion and scour	<input type="text"/>	GENERAL RECOMMEND <input type="text"/>	
Piles	<input type="text"/>	<input type="text"/>	Waterway opening	<input type="text"/>		
Recommendation	<input type="text"/>	<input type="text"/>	Bank protection	<input type="text"/>		

ACCESS CATEGORY:

FLAG ISSUED? NONE 61
 RED STRUCTURAL 62
 YELLOW STRUCTURAL 63
 SAFETY 64

BRIEF REASON

REVIEWED BY _____
 P.E. NUMBER _____
 DATE _____

Appendix G

**Richmond Creek Bridge
Photos and Field Notes**



Photo No.: RC01

Location: Bridge roadway, looking east from the west approach.

Description: General configuration.



Photo No.: RC02

Location: Bridge roadway, looking west from the east approach.

Description: General configuration.



Photo No.: RC03

Location: West approach, looking west from the bridge.

Description: General configuration.



Photo No.: RC04

Location: East Approach, looking east from the bridge.

Description: General configuration.



Photo No.: RC05

Location: North elevation.

Description: General configuration. Note debris fences.



Photo No.: RC06

Location: North elevation, Span 4 and navigation channel below.

Description: General configuration. Note debris fences in good condition.



Photo No.: RC07

Location: South elevation looking northwest, Spans 1, 2 and 3.

Description: General configuration. Note debris fence in good condition.



Photo No.: RC08

Location: South elevation, looking northeast, Spans 5, 6 and 7.

Description: General configuration. Note debris fence in good condition.



Photo No.: RC09

Location: Looking north at Richmond Creek from below Span 6.

Description: General configuration. Note debris fencing and boom in good condition.



Photo No.: RC10

Location: Tied-up at Main Creek Bridge

Description: Deck barge, aerial lift and tugboat used for inspection of Richmond Creek Bridge.



Photo No.: RC11

Location: West Abutment.

Description: General configuration. Abutment stem, seat, pedestals and bearings in good condition. Grouted rip-rap slope protection also in good condition. Note drainage trough and outfall on both sides.



Photo No.: RC12

Location: East Abutment.

Description: General configuration. Abutment stem, seat, pedestals and bearings in good condition. Grouted rip-rap slope protection also in good condition.



Photo No.: RC13

Location: West Abutment, Girder 1.

Description: 25% paint loss on fixed bearing with surface corrosion. Pedestal in good condition.



Photo No.: RC14

Location: West Abutment, Girder 2.

Description: Fixed Bearing in good condition with only minor paint loss. Typical.



Photo No.: RC15
Location: West Abutment, south wingwall.
Description: Wingwall in good condition.



Photo No.: RC16
Location: East Abutment, north wingwall.
Description: Wingwall in good condition.



Photo No.: RC17

Location: East Abutment, south wingwall.

Description: Wingwall in good condition.



Photo No.: RC18

Location: West Abutment, north wingwall seen from the west approach.

Description: Wingwall in good condition.



Photo No.: RC19

Location: West Abutment, looking from south fascia.

Description: Abutment and wingwall slopes are stabilized with large grouted rip-rap in good condition.



Photo No.: RC20

Location: East Abutment.

Description: Abutment and wingwall slopes stabilized by large grouted rip-rap in good condition.



Photo No.: RC21

Location: East Abutment.

Description: Same as RC20, closer view of rip-rap in good condition.



Photo No.: RC22

Location: West face (channel face) of Pier 4.

Description: Fender in good condition with some weathering of timber rub rails. Note concrete cap beams in good condition.



Photo No.: RC23

Location: East face of Pier 3.

Description: Fender in good condition with some weathering of timber rub rails. Note concrete cap beam in good condition.



Photo No.: RC24

Location: West shore, south of the bridge.

Description: Shoreline is vegetated and stable. Typical on both shores.



Photo No.: RC25

Location: West approach, south side.

Description: Box beam guide rail in good condition with some minor loss of galvanizing. No transition between guiderail and parapet has been provided. Typical.



Photo No.: RC26
Location: Span 4, south side of roadway.
Description: Extensive pavement break-up and delamination is typical.

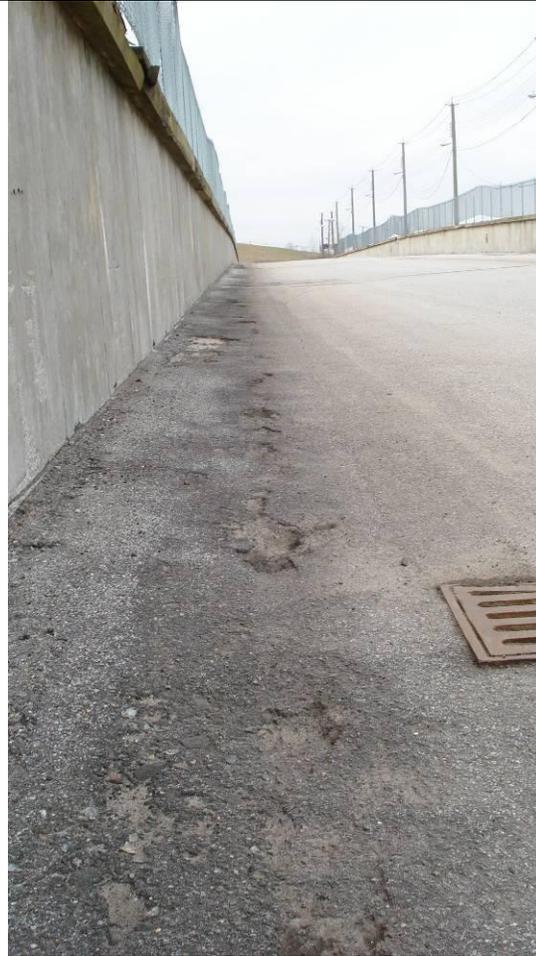


Photo No.: RC27
Location: Span 7, south side of roadway.
Description: Small potholes, pavement break-up and delamination is typical.

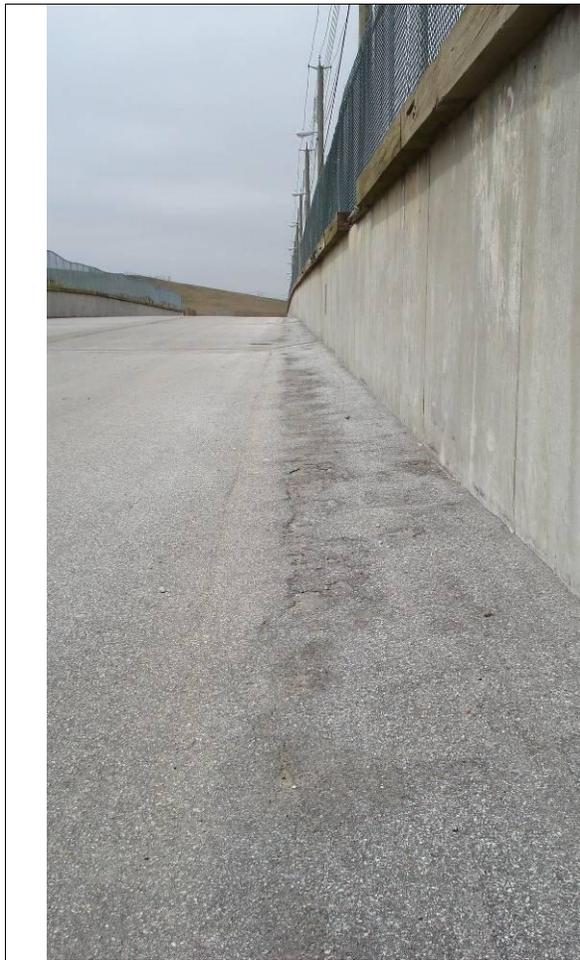


Photo No.: RC28
Location: Span 7, north side of roadway.
Description: Less extensive pavement break-up and delamination is typical.



Photo No.: RC29
Location: Span 7, north side of roadway near east abutment.
Description: Scupper is completely clogged. Typical.



Photo No.: RC30

Location: Span 5, south side of roadway, near Pier 5.

Description: Scupper is partially clogged.



Photo No.: RC31

Location: Span 6 between Girders 8 and 9, south side, looking east.

Description: Typical drainage trough in good condition with only minor surface corrosion.



Photo No.: RC32

Location: Span 7, south scupper near east abutment.

Description: Outfall downspout is heavily corroded.



Photo No.: RC33

Location: North parapet, looking northwest from the east approach.

Description: General view of parapet, rub rail and fence. Fence in poor condition.



Photo No.: RC34

Location: South parapet, looking southwest from the east approach.

Description: General view of parapet, rub rail and fence. Rub rail in fair condition. Fence in poor condition. Note timber utility poles with utility lines and luminaires.



Photo No.: RC35

Location: Span 1 south parapet near west abutment.

Description: Delamination, cracks with efflorescence, map cracking on inside face of parapet. Fence in poor condition.



Photo No.: RC36
Location: Span 1, north parapet 30 ft. from west abutment.
Description: Delamination and cracking with efflorescence.



Photo No.: RC37
Location: Span 3, south parapet at mid-span.
Description: Delamination.

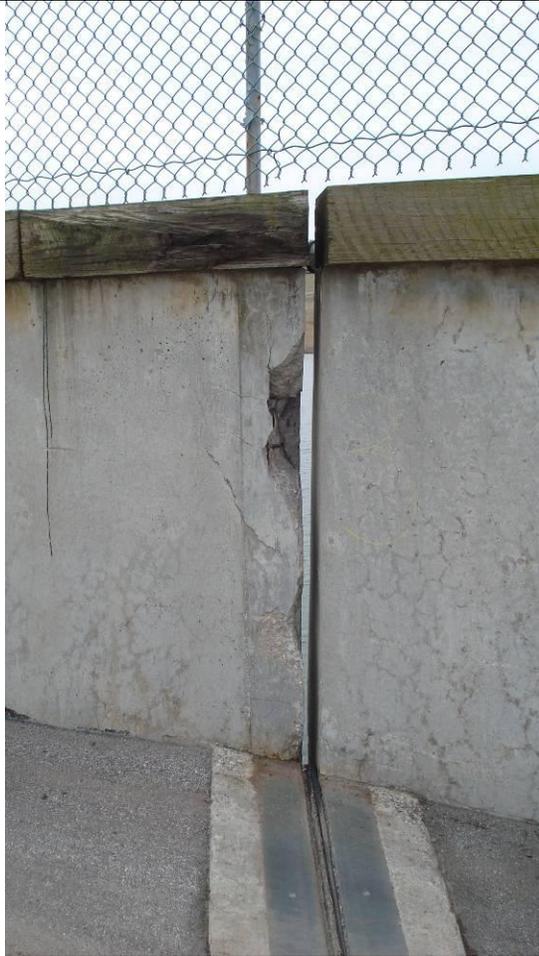


Photo No.: RC38
Location: Pier 4, south parapet.
Description: Spall, cracks and delamination.



Photo No.: RC39
Location: Span 7, south parapet 10 ft. from east abutment.
Description: Delamination. Note scupper is clogged. Note pavement break-up.



Photo No.: RC40
Location: Underside of Span 4 between Girders 8 and 9.
Description: Stay-in-place steel form in good condition. Typical. Note intermediate concrete diaphragm in good condition.



Photo No.: RC41
Location: Underside of Span 6 between Girders 3 and 4.
Description: Stay-in-place steel form in good condition. Typical. Note intermediate concrete diaphragm in good condition.



Photo No.: RC42

Location: Underside of Span 6, looking east towards Pier 6.

Description: General view of superstructure. Note concrete end diaphragms over pier. Pier cap beam in good condition.



Photo No.: RC43

Location: Span 4, Girder 4, north face, 4 ft. from Pier 3 bearing.

Description: Spall in bottom flange of girder with exposed rebar.



Photo No.: RC44

Location: Span 2, Girder 5, south face at Pier 1 bearing.

Description: Crack in end of girder.



Photo No.: RC45

Location: Span 2, Girder 4, north face, at Pier 1 bearing.

Description: Crack in end of girder.

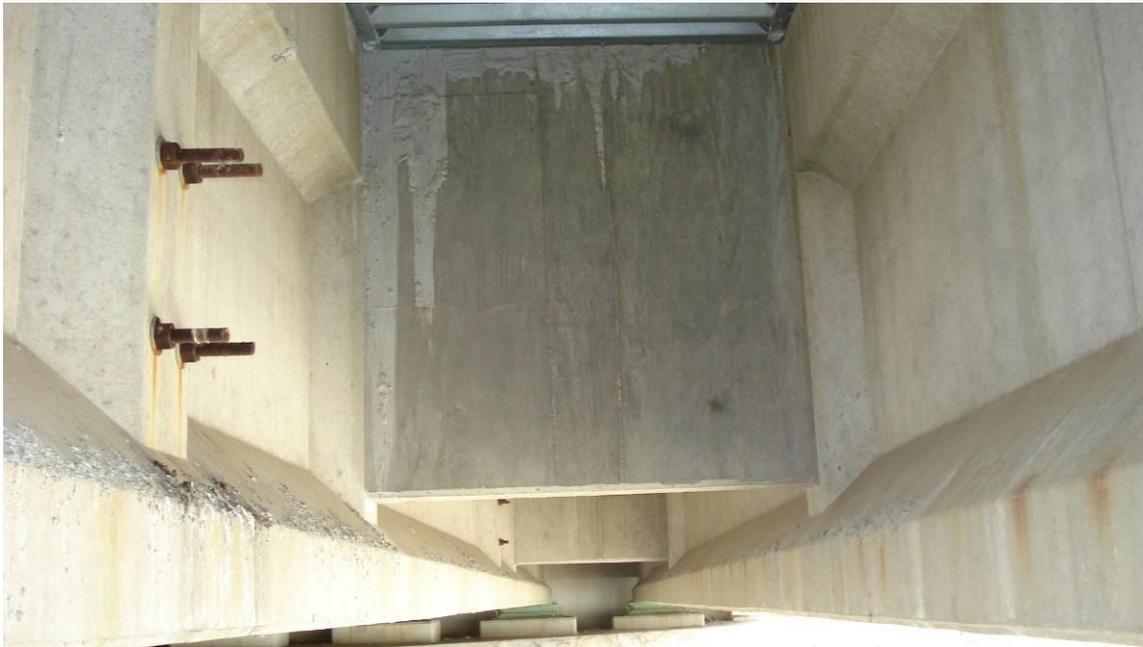


Photo No.: RC46

Location: Span 7, intermediate diaphragm between Girders 7 and 8, west face.

Description: Typical diaphragm in good condition. Note leakage of deck concrete around steel form during construction. Note threaded rebars for adjacent intermediate diaphragms.



Photo No.: RC47

Location: Pier 6, east face between Girders 7 and 8.

Description: Typical end diaphragms at pier are in good condition. Intermediate diaphragms in the background are also in good condition. The fixed bearings are in good condition with little paint loss. Pedestals also in good condition.



Photo No.: RC48

Location: South fascia.

Description: Typical threaded rebar for intermediate diaphragm, with utility bracket cut to clear. Bars, nuts and washers are corroding.



Photo No.: RC49

Location: Pier 3, north fascia.

Description: Typical threaded rebar, beveled washers and plates for end diaphragms. Bars, and hardware are corroding.



Photo No.: RC50
Location: Span 4, Girder 6, south face.
Description: Typical threaded rebar. Nuts are tight. Rebars and hardware are corroding.



Photo No.: RC51
Location: Span 4, Girder 7, south face.
Description: Nuts have walked off of threaded rebar, or were never installed.

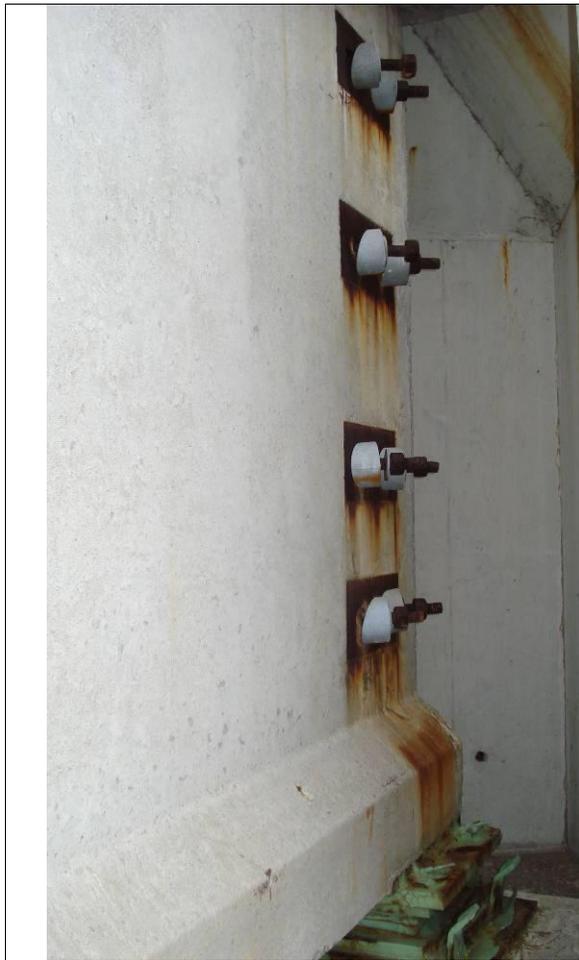


Photo No.: RC52
Location: East Abutment, Girder 1, south face.
Description: Nuts on threaded rebar have loosened.



Photo No.: RC53
Location: Same as RC52.
Description: Closer view of connections.



Photo No.: RC54
Location: Roadway at west abutment, looking south.
Description: Armored compression joint in good condition. Minor deterioration along approach edge of concrete header.



Photo No.: RC55
Location: Roadway at east abutment, looking south.
Description: Armored compression joint in good condition. Minor deterioration along approach edge of concrete header.



Photo No.: RC56

Location: Roadway at Pier 3, looking north.

Description: Armored compression joint in good condition. Minor asphalt deterioration along edges of concrete header.



Photo No.: RC57

Location: Pier 5, South fascia looking north.

Description: General configuration of pier. Typical for Piers 1, 2, 5 and 6. Note end piles battered transversely, and two sets of intermediate piles battered longitudinally. Cap beam and piles in good condition. Note $\frac{3}{4}$ " galvanized steel wire for cathodic protection system.



Photo No.: RC58

Location: Pier 3, north fascia looking southwest.

Description: Typical configuration of Piers 3 and 4. End piles are battered transversely. All intermediate piles are vertical.



Photo No.: RC59

Location: Pier 3, Span 3, Girder 3.

Description: Typical fixed bearings in good condition with some paint loss and surface corrosion.



Photo No.: RC60

Location: Pier 4, Span 4, Girder 9.

Description: Typical expansion bearing in good condition with some paint loss and surface corrosion.



Photo No.: RC61

Location: Pier 4, Girder 5.

Description: Typical moderate paint loss and corrosion on expansion bearing on the right. Note movement accommodated by expansion bearing, which is functioning as designed.



Photo No.: RC62

Location: Pier 1, Span 1, Girder 3 expansion bearing.

Description: Crevice corrosion has broken the weld between an upper guide bar and the upper bearing plate.



Photo No.: RC63

Location: Pier 1, Span 1, Girder 5 expansion bearing.

Description: Crevice corrosion has cracked the weld between an upper guide bar and the upper bearing plate, and the guide bar is distorted.

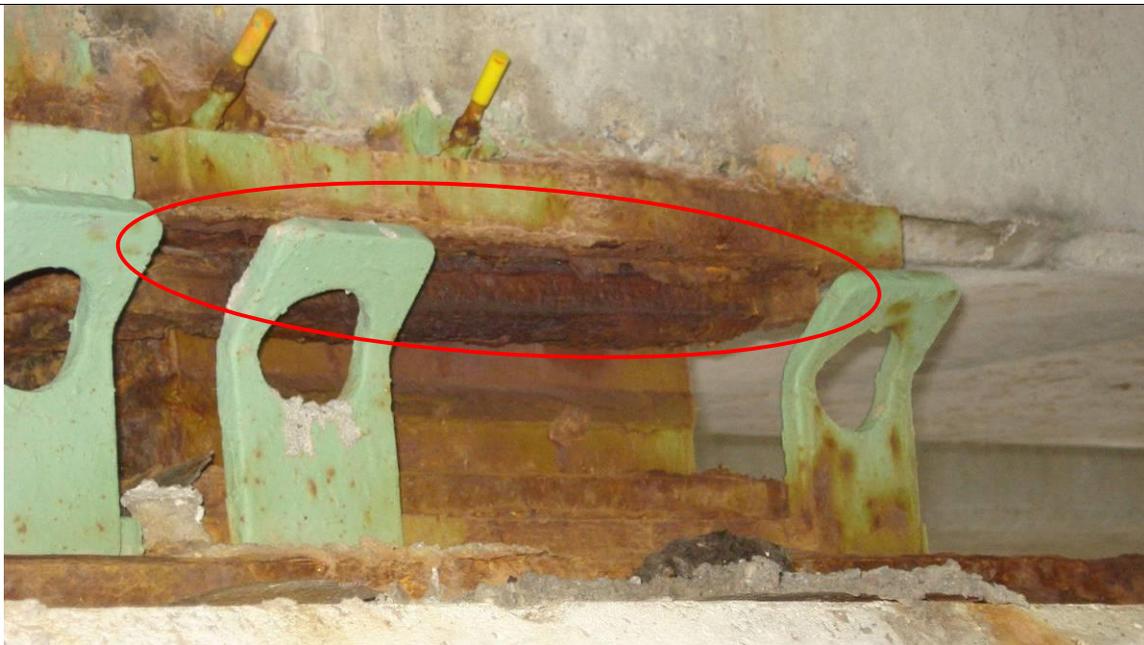


Photo No.: RC64

Location: Pier 1, Span 2, Girder 7 fixed bearing.

Description: Crevice corrosion has cracked the weld between an upper guide bar and the upper bearing plate. Guide bar has partially separated.



Photo No.: RC65

Location: Pier 2, Span 3, Girder 8 fixed bearing.

Description: Crevice corrosion has broken the weld between an upper guide bar and the upper bearing plate. Bar has detached entirely.

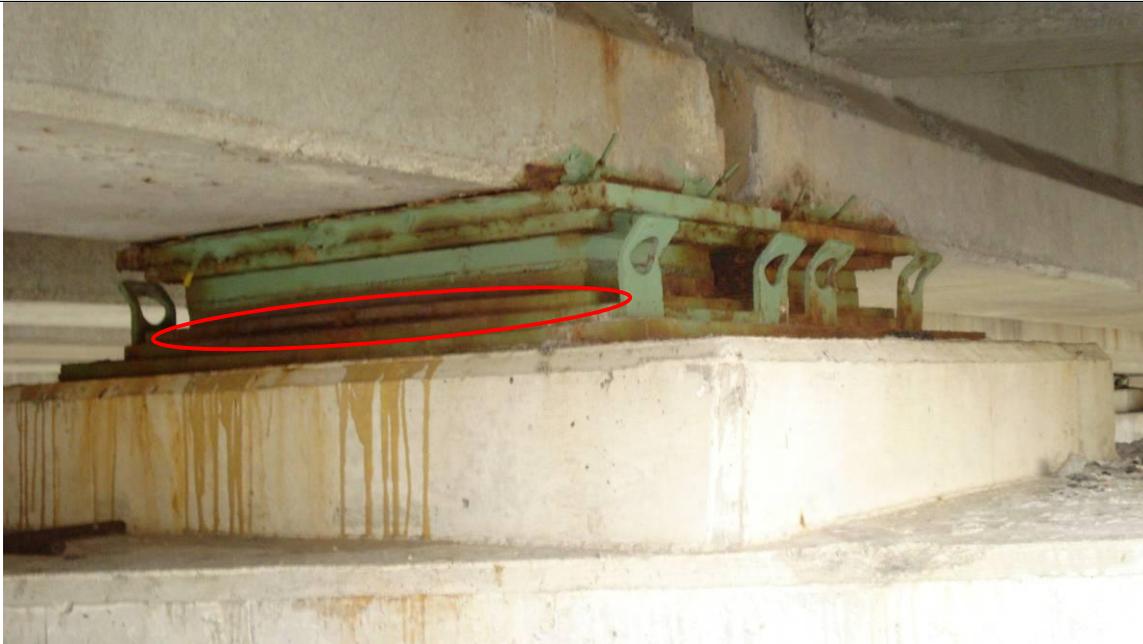


Photo No.: RC66

Location: Pier 3, Span 4, Girder 2, fixed bearing.

Description: Cracked weld between a lower guide bar and the lower bearing plate.



Photo No.: RC67

Location: Pier 2, Span 2, Girder 6.

Description: Delamination and spall on pedestal. The bearing is not undermined.



Photo No.: RC68

Location: Pier 4 top of cap beam between Girders 3 and 4.

Description: Typical debris on top of cap beam is minor.



Photo No.: RC69
Location: Pier 5 cap beam, east elevation.
Description: Cap beam in good condition. Typical.



Photo No.: RC70
Location: Pier 3 southernmost pile.
Description: Typical paint loss and corrosion in the splash zone at and above high water.



Photo No.: RC71

Location: Pier 3 underside of cap beam.

Description: Typical moderate corrosion at top of piles at interface with cap beam. Note $\frac{3}{4}$ " galvanized steel wire for cathodic protection system.



Photo No.: RC72

Location: South fascia at Pier 6.

Description: A PVC conduit carries current for an active cathodic protection system for the steel pipe piles. Wire grounds to a threaded insert welded to rebar in the end of the pier cap, and continues down to an Aluminum anode placed on the riverbed. Typical for all piers.



Photo No.: RC73

Location: North elevation of spans 3, 2 and 1.

Description: Timber lighting standards, luminaries and electric lines carried on the north side of the bridge. Note utilities as well carried just above the piers.

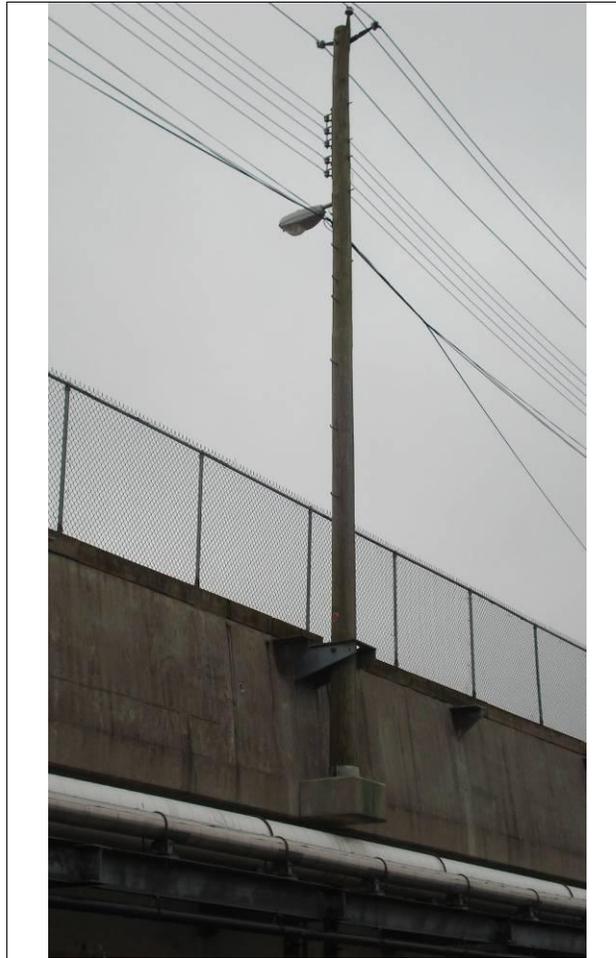


Photo No.: RC74

Location: North fascia at Pier 7.

Description: Typical timber lighting standard and luminaire in good condition.



Photo No.: RC75

Location: North elevation of Span 4.

Description: Galvanized steel frame supporting north side utilities in good condition.



Photo No.: RC76

Location: Northeast wingwall.

Description: General configuration of utility terminations at end of bridge. Utilities and supports in good condition. Northwest termination similar.



Photo No.: RC77

Location: South fascia.

Description: Galvanized steel supports for south side insulated utility line in good condition. Typical.



Photo No.: RC78

Location: South fascia.

Description: General configuration of three galvanized utility conduits in good condition. Conduits have been mounted on brackets originally intended for future fire control system never installed.



Photo No.: RC79
Location: Southeast wingwall.
Description: Landfill utility line penetrates through the wingwall, in good condition. Southwest termination similar.



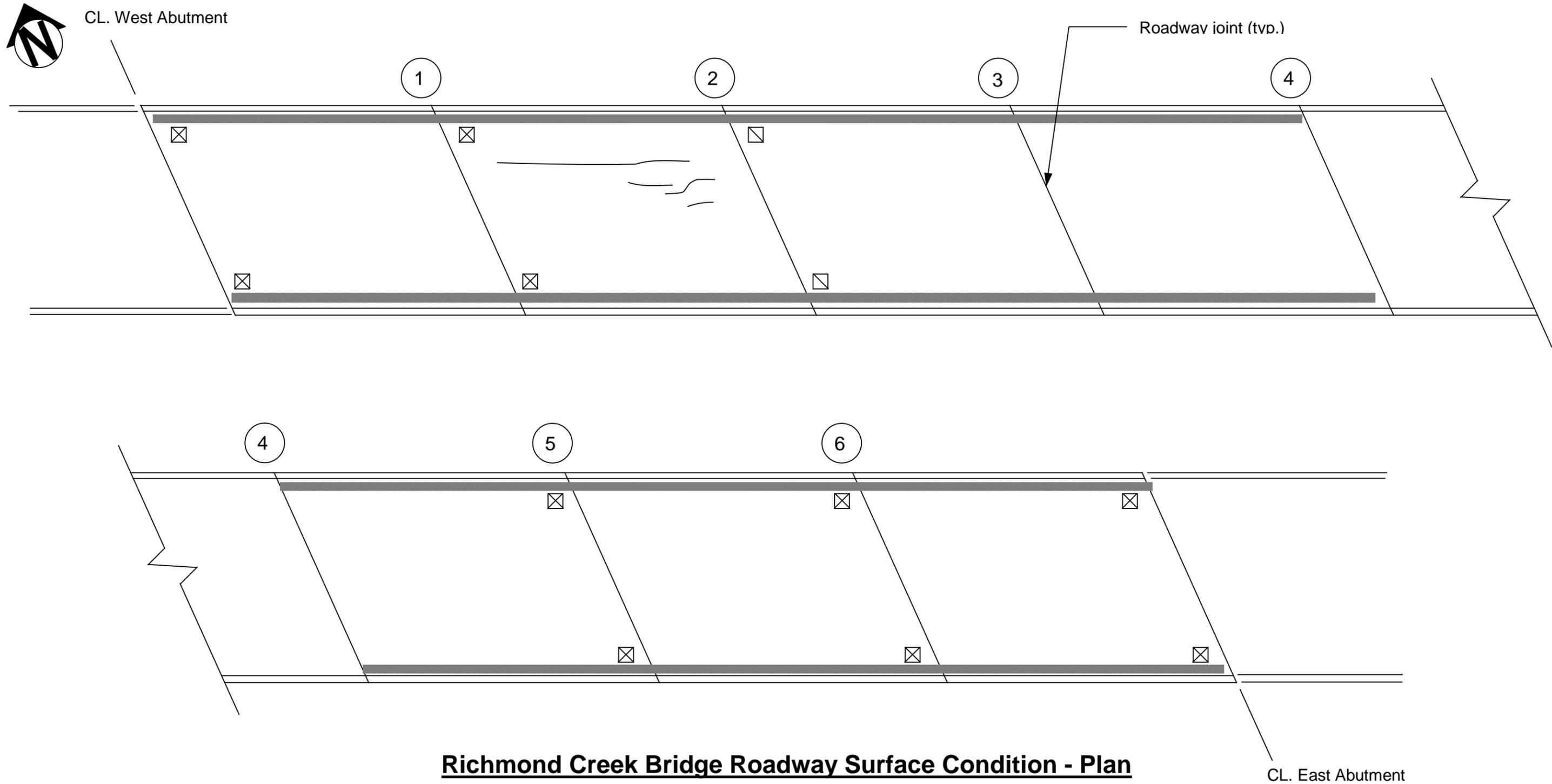
Photo No.: RC80
Location: Span 2, inside face of north parapet, 6 ft. from Pier 1.
Description: Junction box installed for future fire control system never installed. Stainless steel cover is missing. Typical.



Photo No.: RC81
Location: Span 7 inside face of north parapet near Pier 6..
Description: Junction box installed for future fire control system with intact cover in good condition.



Photo No.: RC82
Location: Inside web face of north fascia girder.
Description: Typical back-up plate for utility support brackets in good condition.



Richmond Creek Bridge Roadway Surface Condition - Plan

Legend:

-  Scupper clear
-  Scupper partially clogged
-  Scupper completely clogged



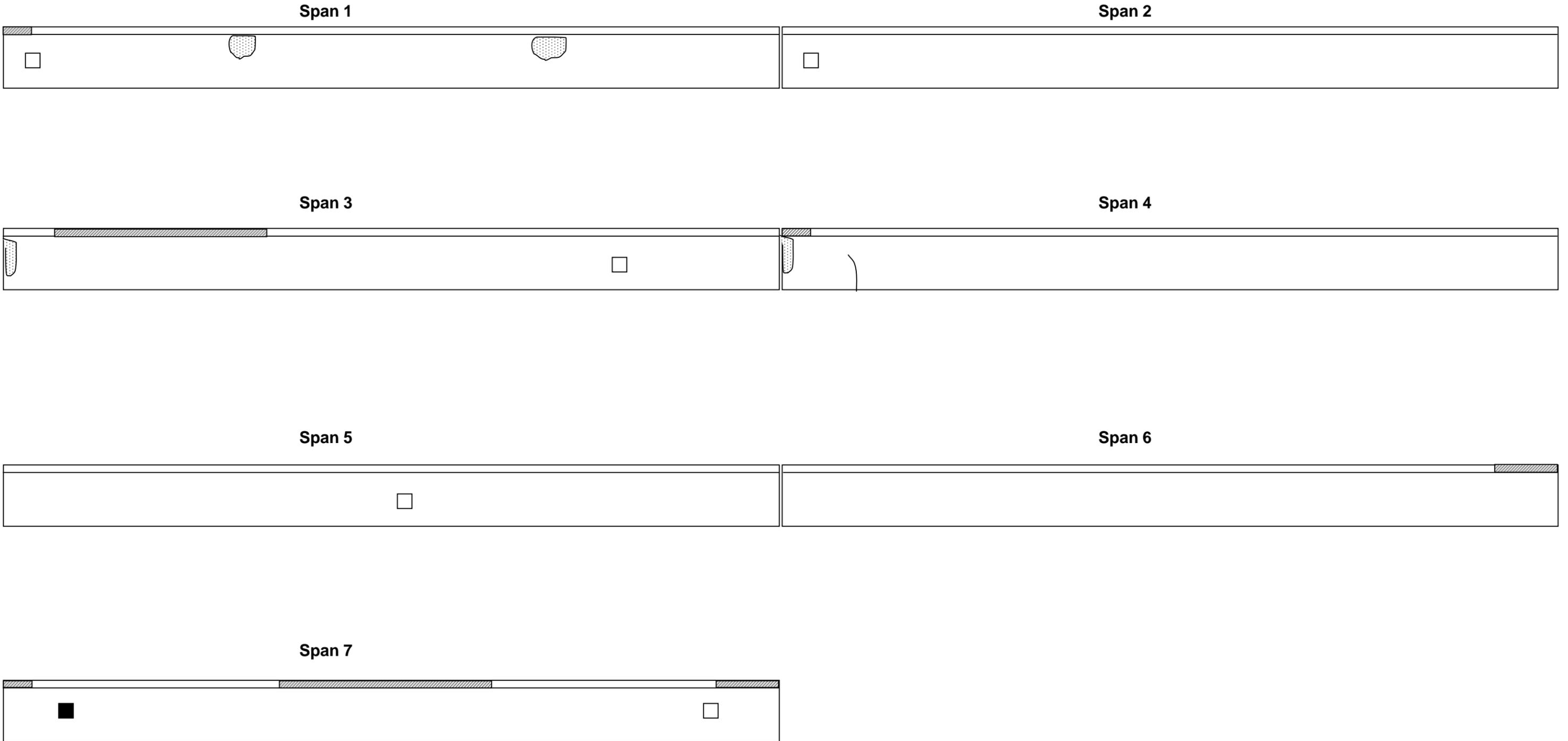
Crack in asphalt wearing surface



Extensive small potholes and wearing surface break-up



Pier



Richmond Creek Bridge North Parapet Inside Face - Elevation

Legend:

- 18" x 18" Junction box for future fire valve, no cover
- 18" x 18" Junction box for future fire valve with stainless steel cover
-  Hollow area with evident delamination
-  Crack with efflorescence
-  Rotted timber rub rail

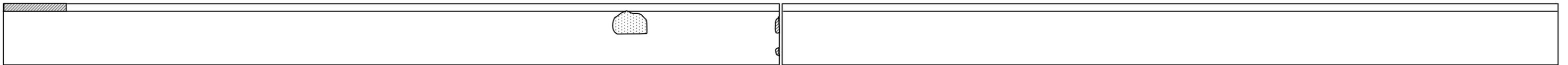
Span 7

Span 6



Span 5

Span 4

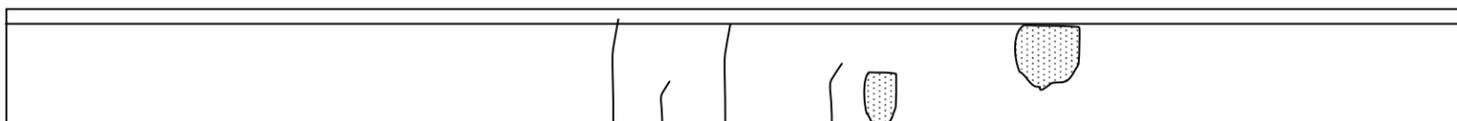


Span 3

Span 2



Span 1



Richmond Creek Bridge South Parapet Inside Face - Elevation

Legend:

 Hollow area with evident delamination

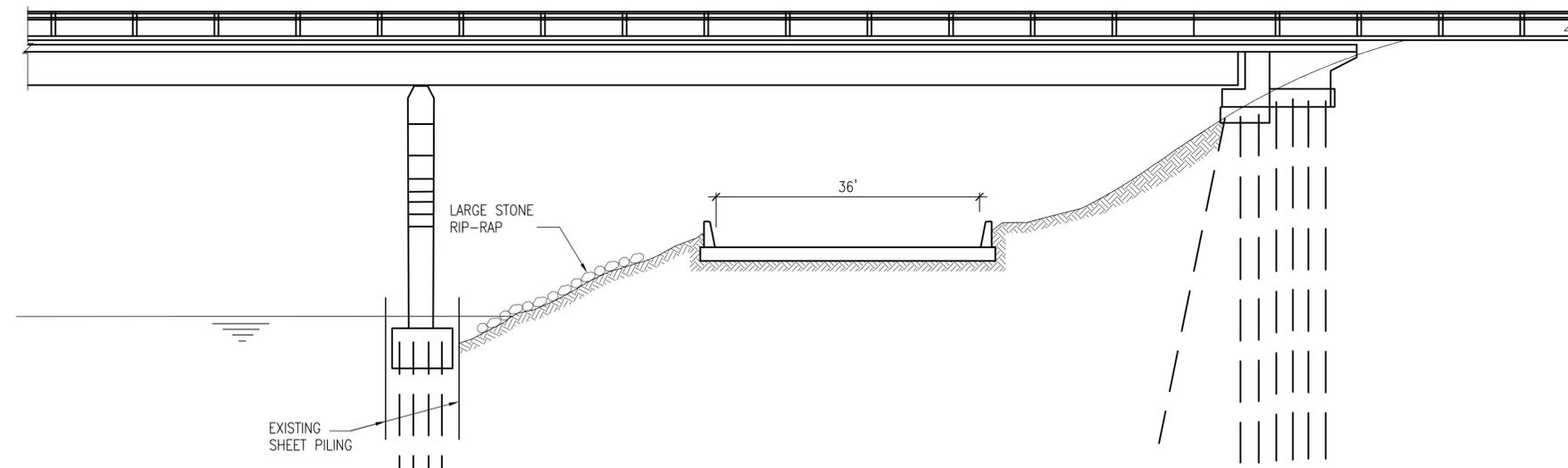
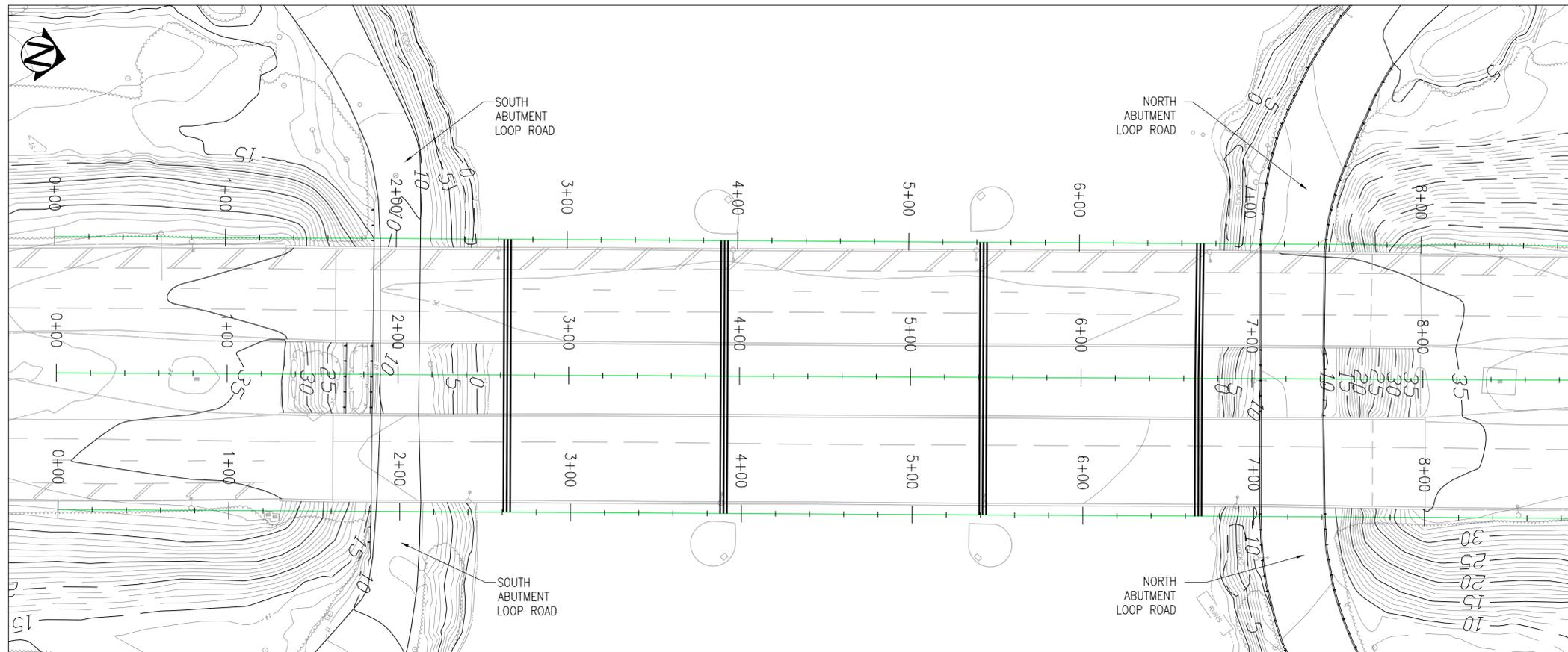
 Crack with efflorescence

 Spall with efflorescence

 Rotted timber rub rail

Appendix H

**WSE Underpass
Roadways - Drawings**



**WEST SHORE EXPRESSWAY
NORTH UNDERPASS**
N.T.S.

Client
NEW YORK CITY
DEPARTMENT OF PARKS
AND RECREATION

Job Title
FRESH KILLS PARK

ARUP

155 Avenue of the Americas
New York NY 10013
Tel (212) 229 2669 Fax (212) 229 1056
www.arup.com

Key Plan

Drawing Title
**FIGURE 19
WEST SHORE EXPRESSWAY
NORTH UNDERPASS**

Scale
NTS

File Name
WSE - NU-EXISTING CONDITIONS.DWG

Drawing Status
BRIDGE INSPECTION REPORT

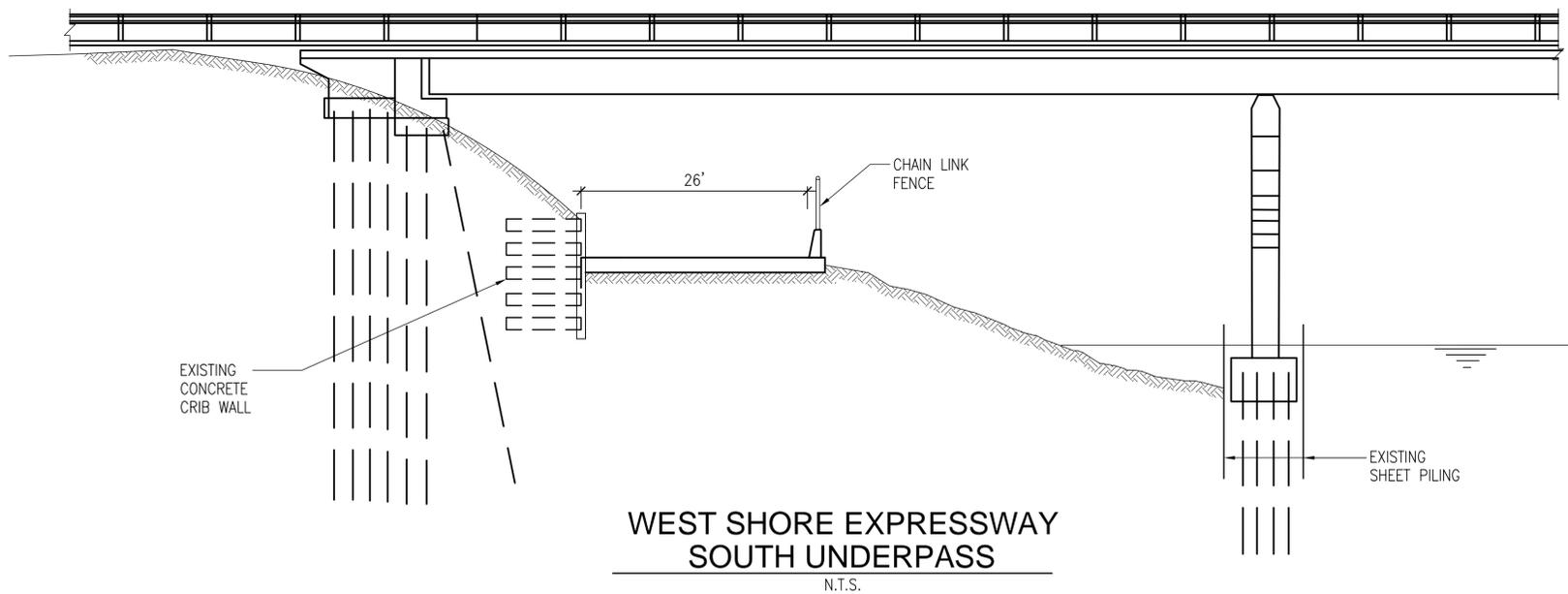
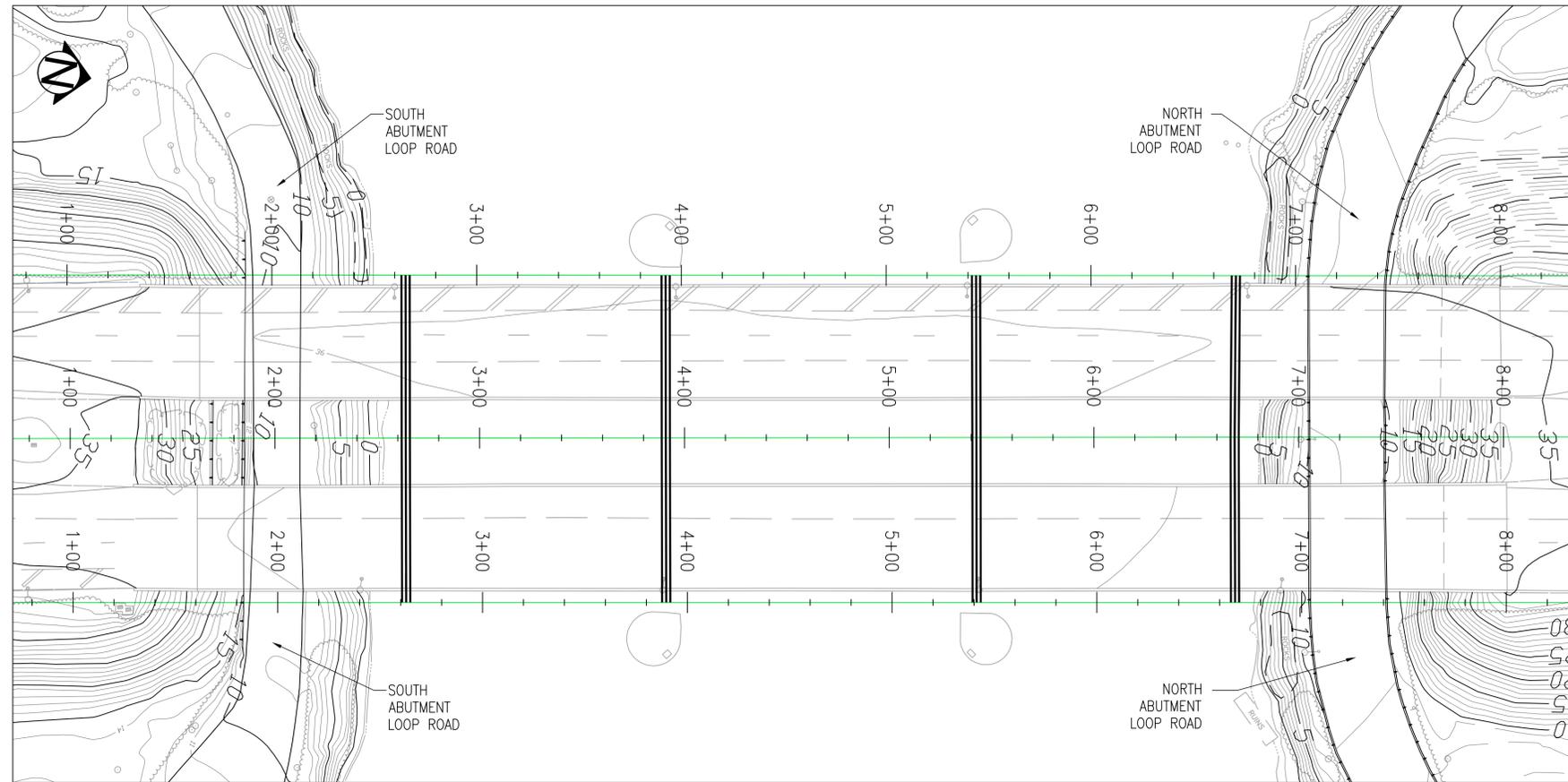
Job No
131730-00

Drawing No

Issue

Page H1

Issue	Date	By	Chkd	Appd



Client
 NEW YORK CITY
 DEPARTMENT OF PARKS
 AND RECREATION

Job Title
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 www.arup.com

Key Plan

Drawing Title

FIGURE 20
 WEST SHORE EXPRESSWAY
 SOUTH UNDERPASS

Scale
 NTS

File Name
 WSE - SU-EXISTING CONDITIONS.DWG

Drawing Status
BRIDGE INSPECTION REPORT

Job No 131730-00	Drawing No	Issue
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Issue	Date	By	Chkd	Appd

Appendix I

WSE Underpass

Roadways - Photos



Photo No.: WSE01

Location: North shore underpass, looking west.

Description: General configuration. Note concrete Jersey barriers on both sides of roadway.



Photo No.: WSE02

Location: North shore underpass, looking east.

Description: General configuration. Note concrete Jersey barriers on both sides of roadway.



Photo No.: WSE03

Location: North shore under west bridge.

Description: Abutment slope stabilized with stone rip-rap.



Photo No.: WSE04

Location: North shore below east bridge.

Description: Abutment slope stabilized with stone rip-rap.



Photo No.: WSE05

Location: North shore underpass looking west.

Description: Concrete Jersey barriers at the toe of the abutment slope. Typical.



Photo No.: WSE06

Location: North shore underpass looking west.

Description: Barriers are backed-up with galvanized guiderail posts. Barriers act to retain the slope.



Photo No.: WSE07

Location: North shoreline looking west.

Description: Shore slopes down a short distance beyond the shore side barriers.



Photo No.: WSE08

Location: North shoreline looking east.

Description: Shore stabilized with large stone rip-rap.



Photo No.: WSE09

Location: South shore underpass looking east from the west approach.

Description: General configuration. Barriers and fence in fair to poor condition.



Photo No.: WSE10

Location: South shore underpass looking east.

Description: General configuration.



Photo No.: WSE11

Location: South shore underpass looking west.

Description: General configuration.



Photo No.: WSE12

Location: South shore underpass looking northwest.

Description: General configuration.



Photo No.: WSE13

Location: South shore west bridge abutment slope.

Description: General configuration. Slope stabilized with gravel and stone. Typical for both bridges.



Photo No.: WSE14

Location: South shore underpass, west of west bridge, looking east.

Description: Beginning of concrete crib wall. Wall badly deteriorated.



Photo No.: WSE15

Location: South shore underpass, just west of west bridge, looking east.

Description: Continuing east along crib wall. Wall stable at this section, but deteriorating.



Photo No.: WSE16

Location: South shore underpass, below west bridge, looking east.

Description: Continuing east along crib wall. Wall stable at this section, but deteriorating.



Photo No.: WSE17

Location: South shore underpass, between east and west bridges, looking east.

Description: Continuing east along crib wall. Wall stable at this section, but deteriorating.



Photo No.: WSE18

Location: South shore underpass, below east bridge, looking east.

Description: Continuing east along crib wall. Wall becoming unstable at this section.



Photo No.: WSE19

Location: South shore underpass, east of east bridge, looking east.

Description: Continuing east along crib wall. Wall deteriorating badly.



Photo No.: WSE20

Location: South shore underpass, east of east bridge, end of wall, looking east.

Description: Continuing east along crib wall. Wall badly deteriorated at this section.



Photo No.: WSE21

Location: South shore just west of west bridge, looking east.

Description: Shoreline not stabilized. Slopes down rapidly to water.



Photo No.: WSE22

Location: South shore just east of east bridge, looking west.

Description: Shore is not stabilized.

