

## Manhattan Bridge Eight Rehabilitation Contracts



**Owner:** New York City Dept. of Transportation  
**Project Location:** New York, NY

Since 1982, GPI has managed construction on the Manhattan Bridge under separate contracts. These contracts are as follows:

***Manhattan Bridge New Maintenance Platforms, Rehab of Track Framing, Anchorage, Piers and Abutments, Contract 1***

Construction Cost: \$7.5 million

Construction engineering and inspection for the removal and replacement of six maintenance platforms along with their tracks, electrical systems, electric motors and the installation of new access stairs and docking platforms. Also included was the rehabilitation of the steel framework which supports four NYCT subway tracks on the approach spans, replacement of the stringer bearings, steel paint removal and application, rehabilitation of the through floorbeams on the Brooklyn approach spans, masonry repairs to the tower and piers, enlargement and waterproofing of the cable anchorage chambers.



***Manhattan Bridge Reconstruction of South Walkway, Truss Hangers, Upper Roadways and Stiffening of the Side Spans, Contract 2***

Construction Cost: \$47 million

Construction engineering and inspection for the reconstruction of the east upper roadway approach spans. This included replacing existing deck and new steel grid deck, new concrete deck and barriers, installing new structural steel stringers and support members and repairing existing members, installing new deck expansion joints, placement of latex modified overlay on deck surface, replacing existing drainage system and installing new overhead lighting system for the east upper roadway. Also scarification of decks and placement of latex modified concrete overlay on elevated structures beyond approach spans. The project also involved stiffening of the east side spans which included installing new upper lateral system under the east upper roadway side spans, repairing floorbeams and stringers on the east upper roadway side spans, installing new bearings under the track stringers, reinforcing outer truss diagonals and bottom truss chords at towers and anchorages, and installing shear end frames at towers and anchorages.



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### *Rehabilitation of Main Cable and Cable Anchorage in Chamber "C", Contract 3*

Construction Cost: \$14 million

CEI for the rehabilitation of main cable in Manhattan Anchorage, Chamber "C" including the installation of new cable anchorages, removal and reinstallation of the existing splay castings, installation of new additional splay bands, spreading of cable strands, inspection, removal and replacement of deteriorated individual wires, and the re-anchoring of strands to new or existing cable anchorages. The project also involved cutting of strands, installing new sockets on strands, installing anchor rods and jacking a predetermined force into strands, and measuring the force with strain gauges and verifying the position of a reference mark on the strand.

### *Modification of Travelers System and Lower Level Interim Rehabilitation, Contract 4*

Construction Cost: \$21 million

Construction engineering and inspection for removal and replacement of existing track beams, removal and replacement of existing hangers including modifications of partially fabricated hangers and providing new system of yokes, mechanical drive, electrical control, skew correction system and electrical feed system. Also, removal and disposal of existing conduits, conductor rails, pull boxes, junction boxes, mechanical machinery and electrical equipment.



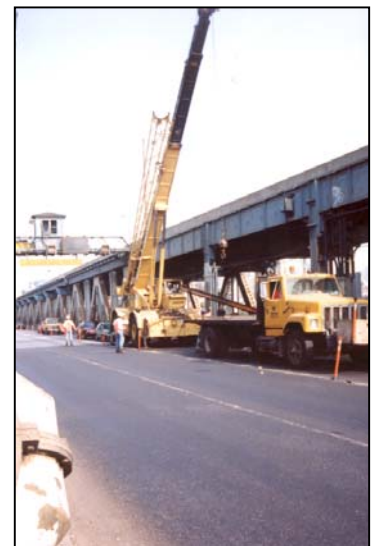
Also included was the interim rehabilitation to the structural steel support members for the lower roadway of the bridge, rehabilitation of floorbeams, crossbeams and ends of stringers, replacing truss "A" bearing at the Brooklyn Anchorage, and rebuilding the backwall at the Manhattan Anchorage.

### *South Side Approach and Suspended Spans Rehabilitation, Contract 5*

Construction Cost: \$120 million

CEI for the rehabilitation of the south side of the Manhattan and Brooklyn approaches including replacement of the structural support steel and replacement of the reinforced concrete-filled grid deck, structural steel repairs to the spans, and placement of polymer overlay for longer lasting wearing surface. Also included was the installation of a new drainage system, steel expansion joints and new concrete barriers.

The project also involved completion of side span stiffening system, including installing new upper lateral system under the west upper roadway suspended spans, repairing floorbeams and stringers under the west upper roadway suspended spans, replacement of bearings on both the west upper roadway and under the west track stringers, reinforcing outer truss diagonals and bottom truss chords at towers and anchorages, installing shear end frames at towers and anchorages and installing new lateral system under the entire lower level.



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### *Bridge Painting, Cable Rehabilitation and Structural Repairs, Contract 8C*

Construction Cost: \$124 million

Rehabilitation of the west side tunnels, plaza areas on the approaches; the replacement of lower roadway double floorbeams at PP37-38 in both the approach spans and at PP0 at the anchorages; the rehabilitation of the eyebars in anchorage chambers B, the dehumidification of the anchorage chambers; the rehabilitation of Brooklyn Plaza Park; the replacement of subway floorbeams and stringers on the west side in both approaches and suspended spans; installation of fencing and gates on railing; installation of railing at anchorages; installation of hand-drive on travelers; and completion of lighting on the west upper roadway. The painting part of this contract provided for the removal of existing paint from the west side Truss A to east side of Truss B, both towers and Cables A and B and replacement with new coating.



Rehabilitation also involved the Manhattan Arch and Colonnade, including repair and replacement of stone lintels and balustrades, replacement of Arch roof, cleaning and pointing of entire structure, and installation of new lighting system to illuminate the Arch and Colonnade. Also included was the restoration of the Manhattan Plaza to a pedestrian friendly urban plaza.

### *Rehabilitation of North Spans over East River, Contract #10*

Construction Cost: \$185 million

Rehabilitation consists of stiffening the north side suspended spans, including tie-in with the south side main span laterals; rehabilitation of the north side approach spans and subway tunnels; rehabilitation of the north upper roadway in the suspended spans; replacement of the north upper roadway deck in the Brooklyn and Manhattan elevated structures, construction of a new north side bikeway; removal of the bridge railing along Truss D at the anchorages; installation of maintenance platforms and netting under the Brooklyn and Manhattan approaches; renovation of the interior of the Manhattan arch; and installation of an Intelligent Traffic System (ITS) including CCTV's.



The maintenance painting portion of this contract provides for the removal of existing coating and replacement with a new three-coat paint system for all structural steel on the north side, including the trusses, floorbeams, stringers and brackets, suspension cables and suspenders from the south side of Truss C to the north side of Truss D, including the north bikeway.

### *Rehabilitation of Lower Roadways, Contract #11*

Construction Cost: \$150 million

Resident engineering and inspection services for the reconstruction of lower roadway; removal and replacement of floorbeams, stringers, bearings and deck on the main span, side spans and approach spans; rehabilitation of anchorage chambers; installation of new lighting and traffic signs on lower roadway; rehabilitation of travelers in suspended spans; replacement of maintenance platforms at towers; realignment of Sands Street in Brooklyn; replacement of suspender ropes in main span; and repair of flagged conditions.

